Final Environmental Impact Report
(EEA No. 16640)

CAPE COD GATEWAY AIRPORT
MASTER PLAN IMPROVEMENT PROJECTS

September 16, 2024

GATEWAY CAPE COD AIRPORT

Epsilon ASSOCIATES INC.

Final Environmental Impact Report
(EEA No. 16640)

CAPE COD GATEWAY AIRPORT

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LIST OF ACRONYMS

AC	Advisory Circular
ADG	Airplane Design Group
AEDT	Aviation Environment Design Tool
AFFF	Aqueous Film Forming Foam
AIP	Airport Improvement Program
ALP	Airport Layout Plan
AMP	Airport Master Plan
ARFF	Airport Rescue and Fire Fighting
AST	Aboveground Storage Tank
ATCT	Airport Traffic Control Tower
AUL	Activity Use Limitation
BMP	Best Management Practices
BRL	Building Restriction Line
BVW	Bordering Vegetated Wetlands
CCGA	Cape Cod Gateway Airport
CCRTA	Cape Cod Regional Transit Authority
CFR	Code of Federal Regulations
CGP	Construction General Permit
CIP	Capital Improvement Plan
CMP	Construction Management Plan
CMR	Code of Massachusetts Regulations
CWA	Clean Water Act
DEIR	Draft Environmental Impact Report
DGA	Designated Geographic Area
DNL	Day Night Average Sound Level
DRI	Development of Regional Impact
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMAS	Engineered Material Arresting System
ENF	Environmental Notification Form
EO	Executive Order
EOEEA	Executive Office of Energy and Environmental Affairs
EPA	Environmental Protection Agency
ERP	Energy Reduction Plan
ESA	Environmental Site Assessment
ESHGWT	Estimated Seasonal High Groundwater Table
EV	Electric Vehicles
EVSE	Electric Vehicle Supply Equipment
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FONSI	Finding of No Significant Impact
Ft	Feet
GHG	Greenhouse Gases
HWG	Horsley Witten Group
HYA	Cape Cod Gateway Airport
IRA	Immediate Response Action
LDA	Landing Distance Available

LIST OF ACRONYMS (Continued)

LF	Linear Feet
LID	Low Impact Development
LQG	Large Quantity Generator
LSP	License Site Professional
LUW	Land Under Water
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airports System
OHM	Oil and Hazardous Materials
OWS	Oil Water Separator
p	Phosphorus
PAH	Polycyclic Aromatic Hydrocarbons
PFAS	Per- and polyfluoroalkyl substances
PM	Particulate Matter
RAO	Response Action Outcome
RAPS	Response Action Performance Standards
RDC	Runway Design Code
RMAT	Resilient MA Action Team
RTN	Release Tracking Number
ROFA	Runway Object Free Area
RPZ	Runway Protection Zones
RSA	Runway Safety Area
RVZ	Runway Visibility Zone
RWY	Runway
SAF	Sustainable Aviation Fuel
SCM	Stormwater Control Measures
SF	square foot
SHMCAP	State Hazard Mitigation and Climate Adaptation Plan
SHPO	State Historic Preservation Officer
SIC	Standard Classification Code
SIP	State Implementation Plan
SMART	Strengthening Mobility and Revolutionizing Transportation
SPCCP	Spill Prevention, Control, and Countermeasure Plan
SRE	Snow Removal Equipment
SWPPP	Stormwater Pollution Prevention Plan
TOFA	Taxiway Object Free Area
TOYR	Time-of-Year Restrictions
TPH	Total Petroleum Hydrocarbons
TSA	Taxiway Safety Areas
TSS	Total Suspended Solids
TWY	Taxiway
UHI	Urban Heat Island
USACE	U.S. Army Corps of Engineers
USGS	United States Geological Survey
VFR	Visual Flight Rule
WOTUS	Waters of the United States
WPA	Wetlands Protection Act
WQC	Water Quality Certification

Chapter 1.0

Introduction

1.0 INTRODUCTION

Cape Cod Gateway Airport Commission (the Commission) proposes to implement a series of airport improvement projects identified in the Federal Aviation Administration (FAA)-approved 2022 Cape Cod Gateway Airport Master Plan Update (the Projects). The 2022 Master Plan Update provides a framework to guide future Airport development that will enhance safety, cost-effectively satisfy current and future aviation demand, meet FAA standards for airport design for the families of aircraft that use the airport, while considering potential environmental and socioeconomic impacts.

The Cape Cod Gateway Airport (HYA or the Airport) is in the village of Hyannis in the Town of Barnstable, Massachusetts, and is owned and operated by the Town of Barnstable as an Enterprise Fund (see **Figure 1.1-1**). As such, the Airport sets rates and charges for the services offered to cover its operating expenses. The Town of Barnstable's General Operating Fund and citizen taxes are not used to operate the airport or to supplement funding for the Airports operation. As the owner and operator, the Town of Barnstable is also identified by the FAA as the designated Sponsor of the airport and accepts federal and state grants and the associated grant assurances. The Airport also serves as an important regional transportation hub to area attractions and recreational venues and provides a key role in emergency response activities. The Airport is identified in the National Plan of Integrated Airports System (NPIAS) with a service level of Non-Hub Commercial Service. See **Figure 1.1-2** for the Airport's current layout.

The current airport funding program, known as the Airport Improvement Program (AIP), was established by the Airport and Airway Improvement Act of 1982 (Public Law 97-248). Since then, the AIP has been amended several times, most recently with the passage of the FAA Modernization and Reform Act of 2012. **Funds obligated for the AIP are drawn from the Airport and Airway Trust fund, which is supported by aviation user fees, fuel taxes, and other similar revenue sources.**

The analysis presented in this Final Environmental Impact Report (FEIR) refines the projects discussed in the 2023 Draft Environmental Assessment and Environmental Impact Report (Draft EA/EIR) and provides even more detail on the environmental impacts of the projects and the mitigation strategies that will be taken on to address environmental impacts. This document has been prepared in accordance with the MEPA Certificate on the Draft Environmental Assessment and Draft Environmental Impact Report dated February 16, 2024 (Appendix A) and MEPA Regulations (301 Code of Massachusetts Regulations [CMR] 11.07), and most importantly, feedback and comments received through the public engagement process. The Final Environmental Assessment (EA) document has been prepared as a separate, stand-alone document to meet National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1500-1508 and 23 CFR 771) requirements of federal agencies to determine whether there are significant impacts associated with federal actions, including federally funded projects. Information in this FEIR is incorporated into the NEPA EA as may be required.

G:\Projects2\MA\Barnstable\6116\MXD\1-1_USGS_Locus_20230911.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

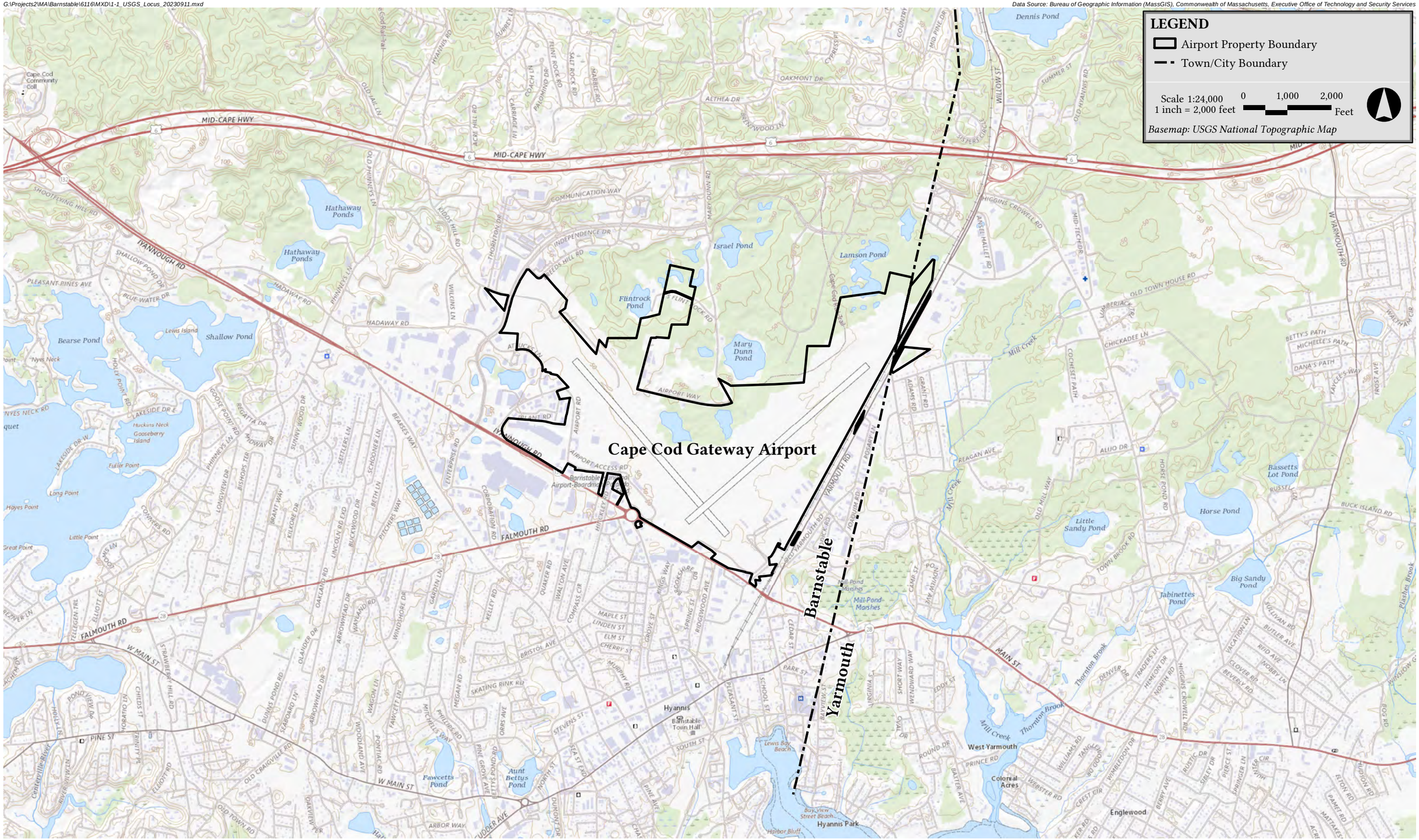

Figure 1.1-1
USGS Locus Map

G:\Projects2\MA\Barnstable\6116\MXD\1-2_Existing_Conditions_20230913.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Cape Cod Gateway Airport **Barnstable, Massachusetts**

Figure 1.1-2
Existing Conditions

This FEIR will provide a brief background about the airport and a brief description of the projects (Chapter 1.0); an in-depth exploration of additional alternatives possible in these projects (Chapter 2.0); a look into the Sole Source Aquifer of the Cape Cod, Massachusetts area and how these projects will address impacts to the sole source aquifer and the groundwater in general (Chapter 3.0); an analysis of the impacts to environmental justice communities and public health (Chapter 4.0); an explanation of the surrounding wetlands, the project's impacts to the wetlands, wetland replication proposed, and how stormwater will be stabilized during and after the projects (Chapter 5.0); an analysis of climate change impacts to the airport, how the projects will be affected by climate change, and how the project proponent can take steps to lessen climate impacts (Chapter 6.0); a review of solid and hazardous waste management practices at the airport during these projects and after they are completed (Chapter 7.0); an evaluation of mitigation and avoidance/minimization measures (Chapter 8.0); and a response to comments chapter of comments that were received during the MEPA public comment period (Chapter 9.0).

1.1 Purpose and Need

The Projects are designed to meet safety and efficiency standards for the aircraft family operating at the Airport, both currently and within future planning horizons, and to support the financial self-sufficiency of the Airport. In addition, the Projects are designed to meet the operational and efficiency requirements of the existing and future design Critical Aircraft as required by FAA. The proposed Projects are based on the recent 2022 Airport Master Plan (AMP) and Airport Layout Plan (ALP). The AMP and ALP serve as the framework for planning future development at the Airport and identify not only airport components that do not meet current design criteria established by the FAA, but also address forecasted demand, capacity requirements, and operational improvements. The 2022 AMP and ALP allow for the planning necessary to preserve the Airport's role in the state, region, and national transportation system and to reaffirm and maintain the future function of the Airport.

The Airport is not increasing airfield capacity nor expanding the Airport but rather, improving safety by increasing runway length, taxiway configurations, and safety area geometry for the current family of aircraft operating at the Airport. As demonstrated by the operational data provided in Chapter 1.0 of the Draft EA/EIR, historical operations were far greater than current and modeled future operations presented. As aircraft, technology, FAA safety and design criteria change, so must the Airport.

The Airport is not seeking an "expansion in capacity" to accommodate aircraft it believes will come if the projects are built, but to meet the needs of existing Airport users by building infrastructure to safely and efficiently accommodate their use.

The proposed Projects from the 2022 Master Plan for the Cape Cod Gateway Airport have the following purposes:

- To improve airfield safety and compliance with current FAA airport design standards by eliminating nonstandard taxiway designs and geometries including direct taxiway connections from apron areas to runways and non-standard taxiway intersections;
- To provide a reasonable and balanced approach in meeting runway length recommendations for safety and operational efficiency as identified in the Master Plan for the current and future families of aircraft using the Airport including general aviation, air carrier, air taxi, military, and private and corporate aircraft;
- To enhance and maintain safe and efficient landside facilities that are compliant with FAA airport design standards and MassDOT Aeronautics Division regulations; and
- To develop opportunities to promote financial self-sufficiency and energy sustainability at Cape Cod Gateway Airport and economic growth for the community.

1.2 Project Description Summary

The Master Plan Projects to be implemented over the next twenty years have to do with airside projects, landside projects, and airspace safety improvements. The Proponent and MassDOT Aeronautics Division (in May of 2022) approve the Master Plan Update and the FAA approves the forecast and accepts the Master Plan Update.

Over the next 5-7 years, HYA plans to commence the design and/or construction of the following projects:

1. **Airside Projects:** Partial parallel Taxiway D to Runway 15-33, Removal of Taxiway E and existing aircraft runup area, and construct an aircraft engine runup area and noise barrier for partial parallel Taxiway D, Relocation and reconstruction of Taxiway B, Extension of Runway 15-33, and Extension of Taxiway A, and the development of hangars within the North and East Ramp areas.
2. **Landside Projects**: Construction of electric aircraft infrastructure and support equipment, construct snow removal equipment (SRE) storage and seasonal maintenance building.
3. **Airspace Control Projects:** Completion of acquisition of Runway 15-33 Runway Safety Area (RSA) and Runway Object Free Area (ROFA) Aviation easements and enhancement of airport control over Runway Protection Zones.

Additional summary description is provided below for each of these projects (see **Figure 1.2-1)**. Please see Chapter 3 of the Draft EA/EIR for detailed descriptions of each project as these have not changed.

1.2.1 Airside Facilities

Airside facilities are those airport layout components that are directly related to the arrival and departure of aircraft, primarily runways and taxiways and their associated safety areas. This section addresses the projects determined to be necessary to bring the airside portion of the airport into compliance with FAA design criteria and standard geometry (see areas in yellow on **Figure 1.2-1)**.

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

PROPOSED AIRPORT PERIMETER ROAD

PROPOSED 895' RUNWAY EXTENSION

PROPOSED 695' DISPLACED THRESHOLD

NON-AVIATION DEVELOPMENT AREA

PHASE 2

EMAS

EASEMENT ACQUISITION AREA

PROPOSED GA DEVELOPMENT

PROPOSED GA DEVELOPMENT

TAXIWAY D (PROPOSED)

TAXIWAY B (PROPOSED)

PHASE 2

PROPOSED ELECTRICAL AIRCRAFT CHARGING AREA

Kidds Hill Road
Merchants Way
Thornton Drive
Gonsalves Road
Independence Drive
Breeds Hill Road
South Flint Rock Road
Mary Dunn Road
Oak Avenue
Willow Street
Attucks Lane
Festival Plaza
Plant Road
Pinecrest Lane
Taxiway A
Runup Pad
Airport Road
Lewis Pond
Upper Gate Pond
Taxiway E
Existing Runway 15-33 (5,255' x 150')
Taxiway C
Existing Runway 6-24 (5,425' x 150')
Taxiway D
Taxiway B
NORTH RAMP
TERMINAL RAMP
EAST RAMP
Jefferson Avenue
Adams Road
Grant Road
Eisenhower Road
Coolidge Road
Lincoln Avenue
Roseary Lane
Benjamin Way
Alijo Drive
Fox Wood Condominiums
Camp Street
Old Mill Way
Yarmouth Road
Joaquim Road
Bodick Road
Farnoe Street
Yarmouth
Mill Pond Village
Old Yarmouth Road
Maher Road
Mary Dunn Way
Barnstable
Buck Island Road
Pondview Avenue
Town Brook Road
Cedar Street
Enterprise Road
Bearse Way
Corporation Street
Yarmouth Road
Bearse Road
Otis Road
Lewis Road
Barnstable Road
Kings Way
Brookshire Road
Ridgewood Avenue
Spring Street
Winter Street
Locust Street
Walnut Street
Spruce Street
Mulberry Street
Maple Street
Linden Street
Hinckley Road
Baxter Road
Corbas Circle
Falmouth Road
Hiramar Road
Alicia Road
Bell Road
Windshore Drive
Edlen Lane
Delta Street
Garden Lane
Uncle Willies Way
Megan Road
Kelley Road
Franklin Avenue
Quaker Road
Walton Avenue
132
28

LEGEND

- Airport Property Boundary
- Existing Runway
- Existing Taxiway
- Noise Barrier
- Pavement to be Removed
- Proposed Electrical Aircraft Charging Area
- Proposed Pavement
- Potential Aviation Development Area
- Phase 2 Projects
- Easement Acquisition Area

Scale 1:12,000
1 inch = 1,000 feet

0 500 1,000 Feet

Basemap: Nearmap Aerial Image, April 2023

Figure 1.2-1
Proposed Master Plan Projects

1.2.1.1 Construct Partial Parallel Taxiway D to Runway 15-33

This Proposed Action involves construction of a new partial parallel taxiway east of Runway 15-33 with a standard 400-foot runway centerline to taxiway centerline separation (**see Figure 1.2-2**). It will extend from the existing Taxiway A1 across existing Taxiway D and Runway 6-24 to the proposed relocated Taxiway B (see Section 1.2.1.3 below). This taxiway would be approximately 3,700 feet in length, 50 feet wide, and tie in with the existing/remaining taxiway. Ultimately, this new partial parallel taxiway will be named Taxiway D. This Project also includes the removal of the portion of existing Taxiway D between existing Taxiway A across Runway 15-33 and up to the proposed new partial parallel taxiway.

1.2.1.2 Remove Taxiway E and Existing Runup Area/Construct a Runup Area for Partial Parallel Taxiway D

The Proposed Action will remove existing Taxiway E and the aircraft runup area (pit), correcting non-right angle geometry at Runway 15-33 (taxiway Intersecting runway at non-right angle). Construction of a new run-up area along the north side of the proposed partial parallel Taxiway D (discussed above) will accommodate the existing fleet of aircraft using the current run-up pad (including the Cessna 402 and Tecnam P2012). A noise wall would be constructed adjacent to the runup area to provide noise mitigation for surrounding areas, replacing the current noise pit that does not meet current federal standards for noise abatement.

1.2.1.3 Realign and Reconstruct Taxiway B

The Proposed Action would re-align Taxiway B to a standard 400-foot separation south of Runway 6-24 to separate the taxiway from the East Apron (see **Figure 1.2-3**). The proposed Taxiway B would be widened to 50 feet to meet taxiway FAA standards to optimize existing and future aircraft movement. Taxiway B would be 4,000 feet long. The Proposed Action would also extend Taxiway B northward by 750 feet to the south of the existing glide slope while the TOFA would remain clear of the glide slope.

1.2.1.4 Runway 15-33 and Taxiway A Extension

The Proposed Action would extend Runway 15-33 by 895 feet on the 15-end (western end) to a total length of 6,150 feet from 5,255 feet (see **Figure 1.2-4**). This extension provides a runway length balanced in terms of enhancing safety and operations, meeting the runway length recommendation identified in the 2022 Master Plan, while minimizing community impacts. This extension is based on the runway length analysis for the critical aircraft identified in the Master Plan and updated analysis in Chapter 2.0 of the Draft EA/EIR document. Critical Design Aircraft as discussed in the 2022 Master Plan and Draft EA/EIR Section 2.2.1 are the Embraer E190 (existing commercial), Gulfstream V/G500 (Existing General Aviation), and Airbus A220 (future commercial). The analysis takes a measured and balanced approach, as the runway length analysis for each of these aircraft not only included a complete

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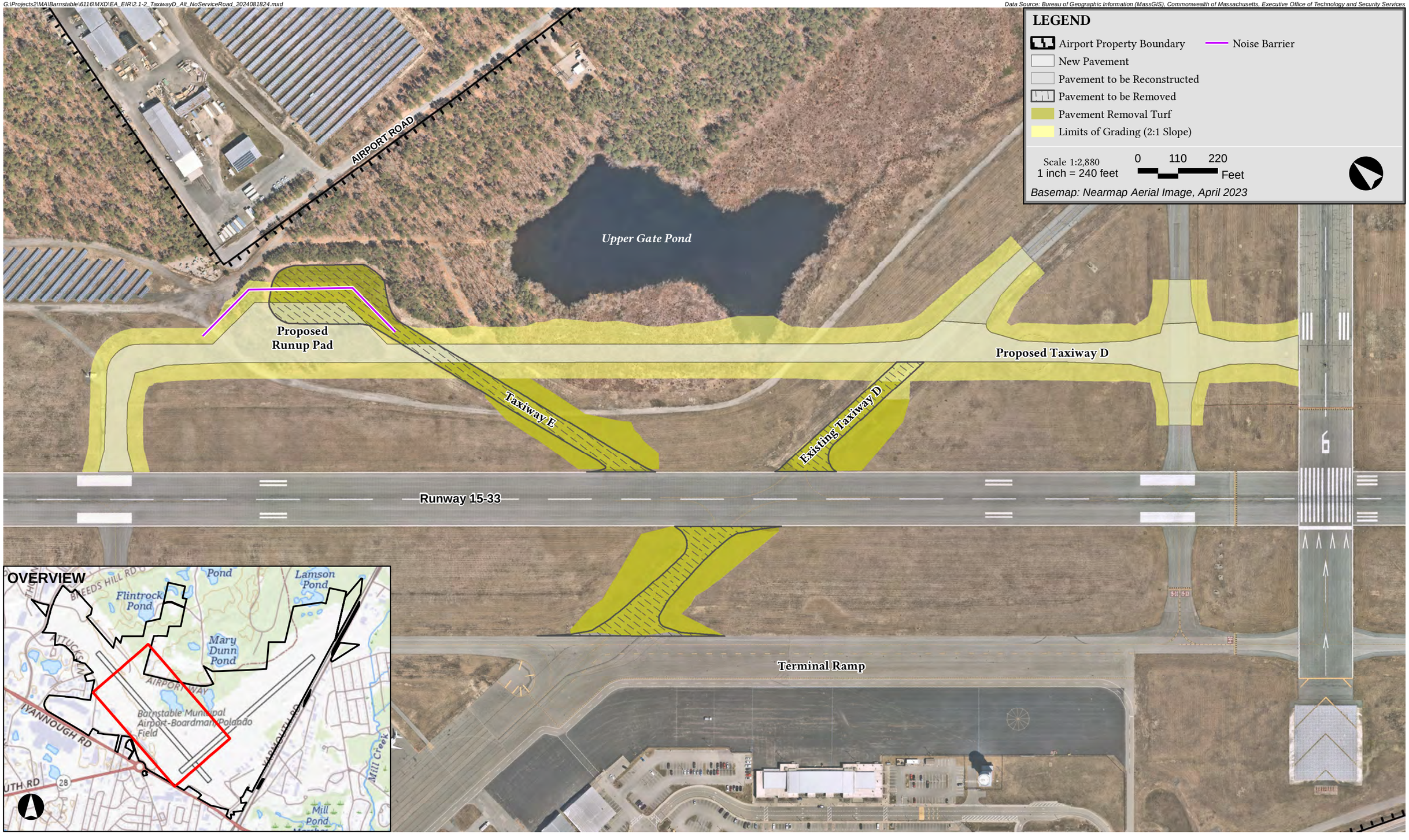
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 1.2-2

Taxiway D No Access Road Alternative

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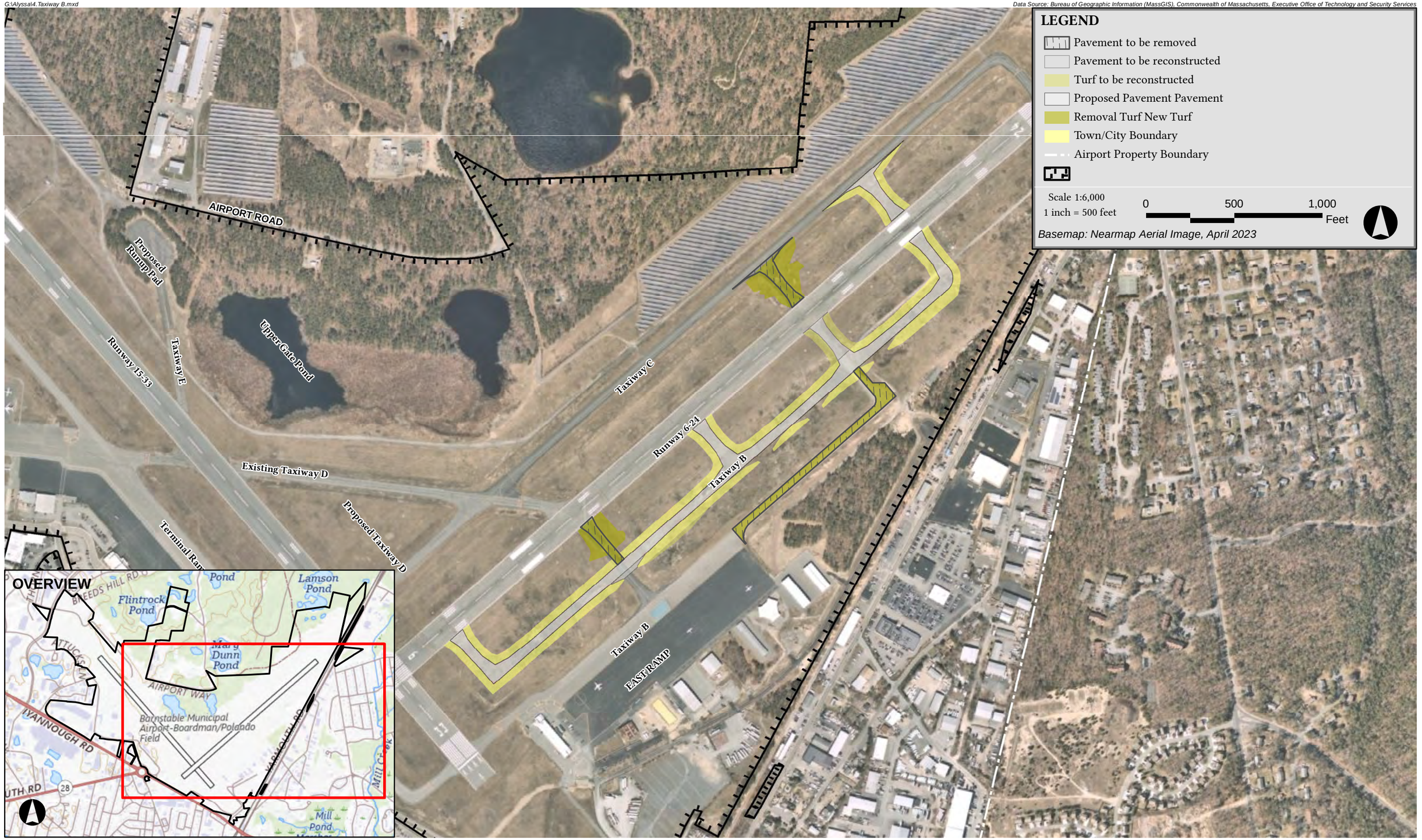
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 1.2-3
Proposed Taxiway B Relocation

G:\Alyssa\RW 15.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

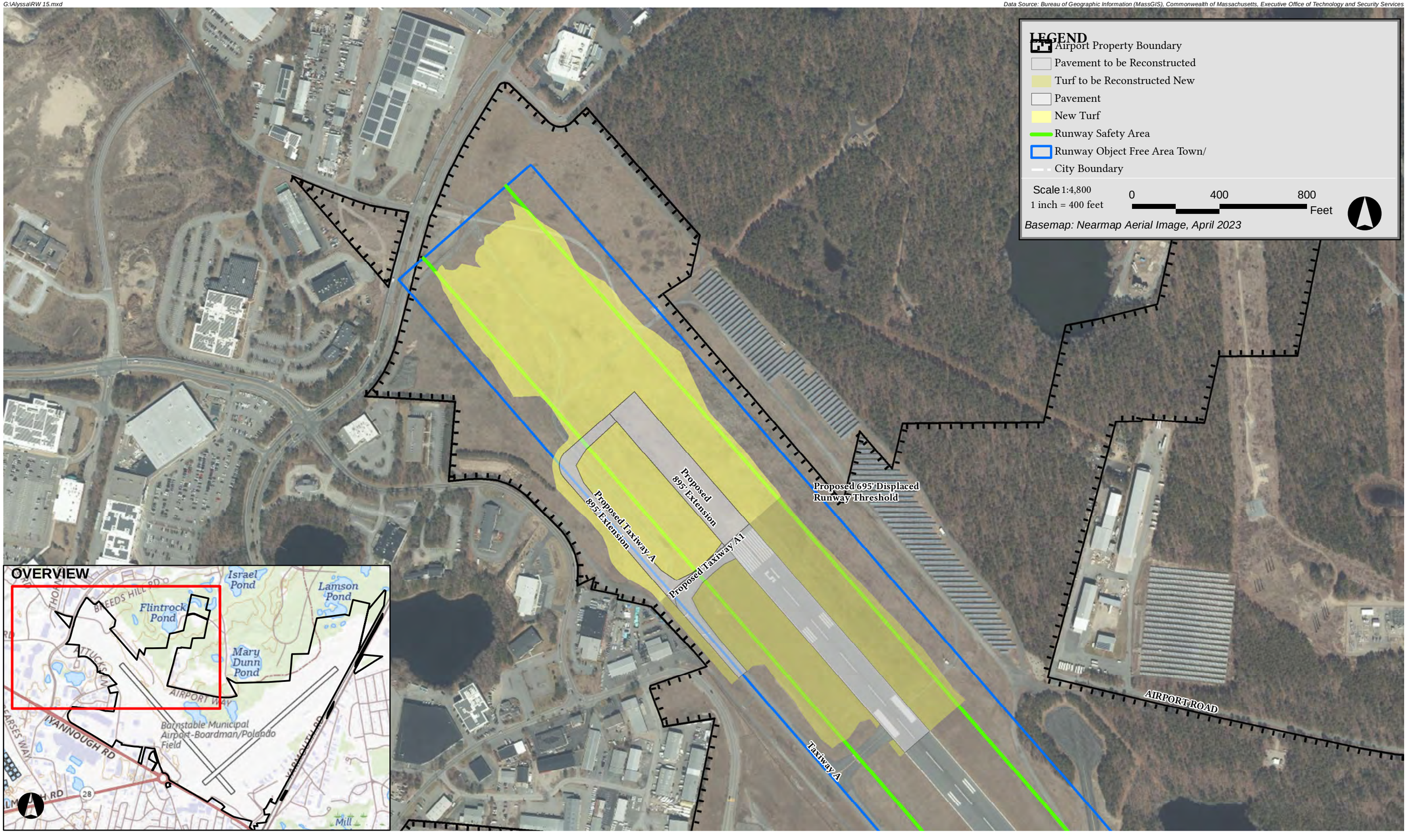


Figure 1.2-4
Proposed Runway 15 Extension

runway length recommendation assessment based on their individual maximum takeoff weights (MTOW), but it also established a typical stage length for each aircraft that is normally experienced at the Airport. The two-step runway length analysis was done to help ensure that the proposed project was moderated and scaled to the actual needs of Cape Cod Gateway Airport.

The extension would maintain the existing width of 150 feet. Grading of a new turf runway safety area would extend from the end of the runway by 1,000 feet. Taxiway A would be extended to the new runway end and connect to Runway 15 at a 90-degree angle. As part of the extension of Taxiway A, a new stub taxiway, Taxiway A4, would be constructed to connect Runway 15-33 to Taxiway A approximately 5,380 feet from the Runway 15 threshold. Due to the grading required associated with the safety areas and runway construction, a portion of the existing runway will also be reconstructed. This includes elevating the grades of a portion of the existing runway to meet the new runway extension. Additionally, Runway 15 Precision Approach Path Indicators (PAPI) will be relocated for the new end of runway. There will be no impacts on wetland resource areas as part of this extension nor tree removals.

This extension includes a 695-foot displaced threshold on the Runway 15 end resulting in a takeoff run available (TORA) of 6,150 feet and a landing distance available (LDA) of 5,455 feet. Runway 33 TORA would increase to 6,150 feet also, and more importantly, LDA increases to 6,000 feet. This provides the Airport with a runway that meets the LDA for the critical design aircraft for existing and future conditions. Taxiway A would be extended to the new runway end and connect to Runway 15 at a 90-degree angle. This extension will take place all on airport property and incorporates declared distances as a mitigating factor for development.

1.2.1.5 Aeronautical Development Areas

The Proposed Action includes two areas for additional aeronautical development on the Airport for a combined 42 acres - East Ramp and North Ramp - as opportunities for growth arise. These ramp development areas would include space for transient aircraft parking as well as additional hangars or other aeronautical businesses.

1.2.2 Landside Improvements

Landside improvements are those projects which support the operations of the Airport.

1.2.2.1 Construct Seasonal SRE and Maintenance Facility

The Proposed Action will construct a new 20,000 sf building for storage of the existing maintenance vehicles and snow removal equipment (SRE). A seasonal vehicle storage structure would be constructed on the northeast side of the Airport, within the East Ramp. This facility would function as winter vehicle and equipment storage in the summer and as summer vehicle and equipment storage in the winter.

1.2.2.2 Construct Electric Aircraft Support Equipment

To respond to industry developments, the Proposed Action includes space for up to six electric aircraft parking for itinerant FAA Airplane Design Group (ADG) II aircraft. (this includes aircraft with a Tail Height of 20 ft to < 30 ft and Wingspan of 49 ft to < 79 ft) The Airport has identified space on either side of the terminal to plan for electric aircraft infrastructure for both GA and commercial aircraft. This equipment will support the charging of electric aircraft.

1.2.2.3 Smart Microgrid

MassDOT Aeronautics recently received a US$1.95 million grant award to be used in the planning of a smart microgrid at the Airport. A microgrid is a local energy production and distribution network that can function independently when disconnected from the main electrical grid (via battery storage and onsite renewables). The microgrid is an important component to the Airport's plan to reduce future emissions based on new abilities to generate and store green energy however it is not included within the Master Plan itself nor funded by FAA or MassDOT.

The microgrid will generate and distribute clean, reliable power, not only to the Airport, but for charging electric aircraft, and electric ground vehicles (including buses). In collaboration with the Cape Cod Regional Transit Authority (CCRTA), the initiative will increase access to clean energy independence while supporting communities near the Airport with cleaner transportation options. The microgrid enhances the Airport's plans to implement electric aircraft charging infrastructure described above and pursue opportunities that are less reliant on external/conventional power sources.

Phase I involves the study and planning of a microgrid placed at the Airport. Phase II will consist of funding to construct the microgrid infrastructure.

1.2.3 Airspace Control Improvements

1.2.3.1 Runway 33 RSA and Runway Object Free Area (ROFA) Avigation Easements

The Proposed Action will acquire avigation easements from willing parties designed to bring existing Runway Object Free Areas (ROFAs) into Airport control. Currently, not all the ROFAs are within airport control for existing conditions. A total of four (4) easements for 0.8 acres have been identified as out of airport control, associated with Runway 33 end. These are identified as Parcels 33-1 through 33-4 on the Town parcel map (see **Figure 1.2-1**). Roadways such as Iyannough Road and Yarmouth Road are not proposed for acquisition. Existing airport penetrations into ROFA are managed through modification to standards approved by the FAA every five years.

Table 1.2-1 ROFA Penetrations

Location	Penetration
Runway 33 End	Iyannough Road, Mary Dunn Way, four off-Airport buildings, Airport perimeter fence, ARFF/Maintenance/SRE Ramp;
Runway 24 End	Yarmouth Road, railroad tracks, Airport perimeter fence
Runway 15	Glideslope runway visual range (RVR), wind cone
Runway 15-33 along the side of the runway	Distance measuring equipment (DME), precision approach path indicator (PAPI) power and control units
Runway 6-24 along the side of the runway	Localizer, DME, PAPI power and control units, glideslope, ASOS

1.2.3.2 Enhance Airport control over off-Airport Property within Runway Protection Zones

The Proposed Action will acquire avigation easements from willing parties designed to bring existing Runway Protection Zones (RPZs) into Airport control. Under existing conditions at the Airport, areas within RPZs that are not under Airport control via either avigation easements or fee simple include all portions of the Runway 6 RPZs west of Iyannough Road (70 parcels), the north and southwest corners of the Runway 15 RPZ (15 parcels), the southern corner of the Runway 24 RPZ (12 parcels), and the eastern portion of the Runway 33 RPZ (36 parcels), for a total of 44 acres/133 parcels. Airport control of these areas could be obtained through direct property acquisition or easements or zoning to control development and land use activities.

Existing avigation easements are identified on Sheet 23 of the Airport Layout Plan in **Appendix B.**

1.2.3.3 Runway 15 Avigation Easements

Avigation easement acquisition off the 15-end, to prevent future obstructions, is required for the runway extension within the Town of Barnstable. A total of 12 additional partial easements will be pursued on a willing seller basis. These easements are primarily commercial properties located on Independence Drive, Thornton Drive, and Kidd's Hill Road. Layout plans depicting these parcels identified for easement acquisition for existing or proposed RPZs are included in **Appendix B**.

Table 1.2-2 Avigation Easements Needed for Proposed Conditions associated with Runway 15 Extension

Parcel ID	Address	Acres	Full or Partial Easement
314-041-00S	270 Communication Way	0.017	Partial
296-005-001	11 Thornton Drive	1.11	Partial
296-009	53 Thornton Drive	0.2	Partial
296-025	400 Kidd's Hill Road	1.57	Partial
295-004-001	0 Wilkins Lane	0.77	Partial
295-011	75 Perseverance Way	0.72	Partial
296-008-0A	30 Thornton Drive	0.11	Partial
296-010	52 Thornton Drive	0.49	Partial
296-031	270 Communication Way	1.42	Partial
296-007	31 Thornton Drive	0.49	Partial
296-005-002	20 Merchants Way	0.01	Partial
296-012-00H	72 Thornton Drive	0.18	Partial
Total		7.11 ac	

1.3 Requirement for an Environmental Impact Report

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(1)(a)(1) and 11.03(1)(a)(2) because it requires Agency Actions and will result in direct alteration of 50 or more acres of land and creation of 10 or more acres of impervious area, respectively.

The project is also required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it is located within a DGA (1 mile) around one or more EJ Populations. The project exceeds ENF thresholds at 11.03(6)(b)(3) for expansion of an existing runway at an airport, 11.03(6)(b)(4) for construction of a New taxiway at an airport, and 11.03(3)(b)(1)(f) for alteration of one-half or more acres of other wetlands (LUW). The project requires a Section 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection (MassDEP). It is subject to the MEPA GHG Emissions Policy and Protocol.

The Executive Office of Energy and Environmental Affairs (EOEEA) issued a MEPA Certificate on the DEIR on February 16, 2024, The MEPA Certificate specified the scope of the analysis needed in the EIR to satisfy MEPA requirements. The MEPA Certificate is provided in **Appendix A.**

The EIR process typically involves a Draft EIR followed by a final EIR. The Draft EIR was prepared and made public on December 8, 2023 (EEA#16640) which opened a formal public comment period through February 9, 2024. This comment period was extended by an additional month beyond the regulatory requirement of 30 days following publication. A public meeting was held on December 12, 2023. In the FEIR, the proponent responds to written comments from the public and regulatory agencies on the Draft EA/EIR and any additional MEPA requirements. At the conclusion of the EIR process, EOEEA issues a MEPA Certification on the FEIR.

1.3.1 Changes to the Project since the Submittal of the Draft EIR/EA

Since the submittal of the Draft EIR/EA on December 15, 2023, the Proponent has continued to refine the projects proposed through conceptual design, additional need analysis, and input from the community and regulatory agencies. This has resulted in additional alternatives evaluated for the Project, including refined Taxiway D alternative configurations. Ultimately, a modification of the Draft EA/EIR-identified Preferred Alternative for Taxiway D was selected that minimized wetland impacts by 35% through the removal of the gravel service road from the design. This modified Preferred Alternative of Taxiway D is presented in Chapter 2.0 Alternatives Analysis.

Additionally, this document presents the following updates:

- Refined land alteration impact calculations;
- Identified areas on Airport for tree planting and off-Airport tree planting program participation;
- Additional information on proposed stormwater management;
- Wetland mitigation plan for wetland resource area impacts;

As presented in the Draft EA/EIR, as a result of public feedback, the Airport shortened the proposed Runway 15-33 extension by 400 feet to address community concerns regarding potential noise, among other modifications. No further modifications to Runway 15-33 are proposed. FAA has also commenced consultation with Massachusetts Historical Commission (MHC) and Tribal Historic Preservation Offices (THPOs).

There have been minor changes to the phasing of these projects, as annual Capital Improvement Plan (CIP) budgets are implemented at the state and federal level based on funding availability. These updates are shown in the construction phasing discussion in Chapter 3.0. Projects that have been determined to commence later than 2029 (including design phases) have been removed from the analysis provided herein. Additional alternatives are discussed for any terminal modifications or expansion as well as the Runway 6 RSA enhancements per the FEIR scope specified in the MEPA Certificate for the Draft EIR, dated February 16, 2024.

Table 1.3-1 Proposed Project Schedule

Project	2024	2025	2026	2027	2028	2029
Airside						
Relocate and Extend Taxiway B	--	Design	Design Construct		-	-
Reconstruct and Realign Taxiways D/E, new run up ramp	-	Permit	-	Design/ Construct	Construct	-
Extend/Reconstruct Runway 15-33	-	-	-	-	-	Design
Extend Taxiway A (including new Taxiway A and A4)	--	-	-	-	-	Design
East Ramp Development	On-going pending leasing					
North Ramp Development	On-going pending leasing					
Landside						
Smart Microgrid	Design	Design	-	-	-	-
Construct SRE / maintenance seasonal facility	-	-	-	-	Construct	-
Construct electric aircraft support equipment	Construct	Construct	-	-	-	-
Airspace Enhancements						
Proposed RPZ Easements Phase I	-	-	-	Design/ Acquire	-	-
Proposed RPZ Easements Phase II	-	-	-	-	-	Design/ Acquire

In response to continued public engagement, the Airport has contracted with aeronautical engineers to consult with FAA, Town of Yarmouth, and the neighborhood civic associations regarding the ability to suggest modifications to required flight paths to minimize neighborhood noise impacts. **This consultation process will continue on a separate track from the MEPA/NEPA review process as FAA has indicated that the noise analysis completed for these projects complies with FAA's regulatory requirements for NEPA review.**

Finally, the Airport has continued to engage neighbors to provide updates on environmental practices related to ongoing remediation efforts on Airport related to PFAS and submitted the Phase IV report to MassDEP through public meetings and presentations.

1.3.2 Land Alteration Updates

Future airfield enhancement projects (Taxiway B, Taxiway D, Runway 15 Extension) have been conceptually designed to avoid and minimize land alteration and impervious area creation. Examples of this impact minimization includes designing with the minimum pavement widths for proposed taxiways and runway projects to limit/minimize the creation of impervious areas. Other examples include minimizing turf side slopes (to the extent practicable) within critical airport surfaces to minimize land alteration (e.g., Runway Safety Areas, Taxiway Safety Areas, etc.) including most notably minimizing the side slope of proposed Taxiway D within the Taxiway Object Free Area (TOFA) as it crosses Upper Gate Pond from the standard 4:1 side slope to a 2:1 side slope in order to minimize the impact to BVW, LUW, and Bank. Additionally, a segment of the perimeter vehicular access road was removed to minimize land and wetland alterations.

The conceptual design for the proposed extension of Runway 15 minimizes land alteration with a combination of runway profile and side slope grading standards (see **Figure 1.2-4**). A closer investigation and evaluation of existing grades and proposed design standards may achieve even less land alteration in the next phase of design development as the permitting phase for individual projects is advanced.

As discussed in the Draft EA/EIR, the Airport also intends to remove certain existing pavement surfaces as future projects are implemented. In total, upon completion of the projects included in the DEIR, the airport anticipates removing approximately 5.84 acres of impervious pavement (see fuchsia areas in **Figure 1.2-1**.) This will result in a minimization of a net increase of impervious surfaces.

With respect to preserving open space and tree cover, the Airport is required by the FAA to keep all of its 'on-airport' aeronautical facilities, and all of its various airspace surfaces clear of obstacles and obstructions. Examples of this include critical areas associated with airfield equipment such as lights, signs, and air navigational aids (NAVAIDS) including ground-based equipment used by pilots for air navigation beyond the airport property boundary. Furthermore, the FAA requires the ground around certain critical areas to meet FAA standards for grading and drainage; maintained as open turf areas which is conducive to preserving open space.

Similar to ground-based NAVAIDS, various object free areas and airspace standards exist for runways and taxiways, which also contribute to preserving open space. For example, airport surfaces such as runways and taxiways have designated "safety areas" requiring specific grading standards resulting in open turf areas which is conducive to preserving open space. In addition, runways are partially defined by certain other 'airspace' surfaces designed to protect the flight of aircraft arriving and departing the airport. Multiple airspace surfaces are generally defined by the location and elevation of the runway end, on centerline, and extend

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

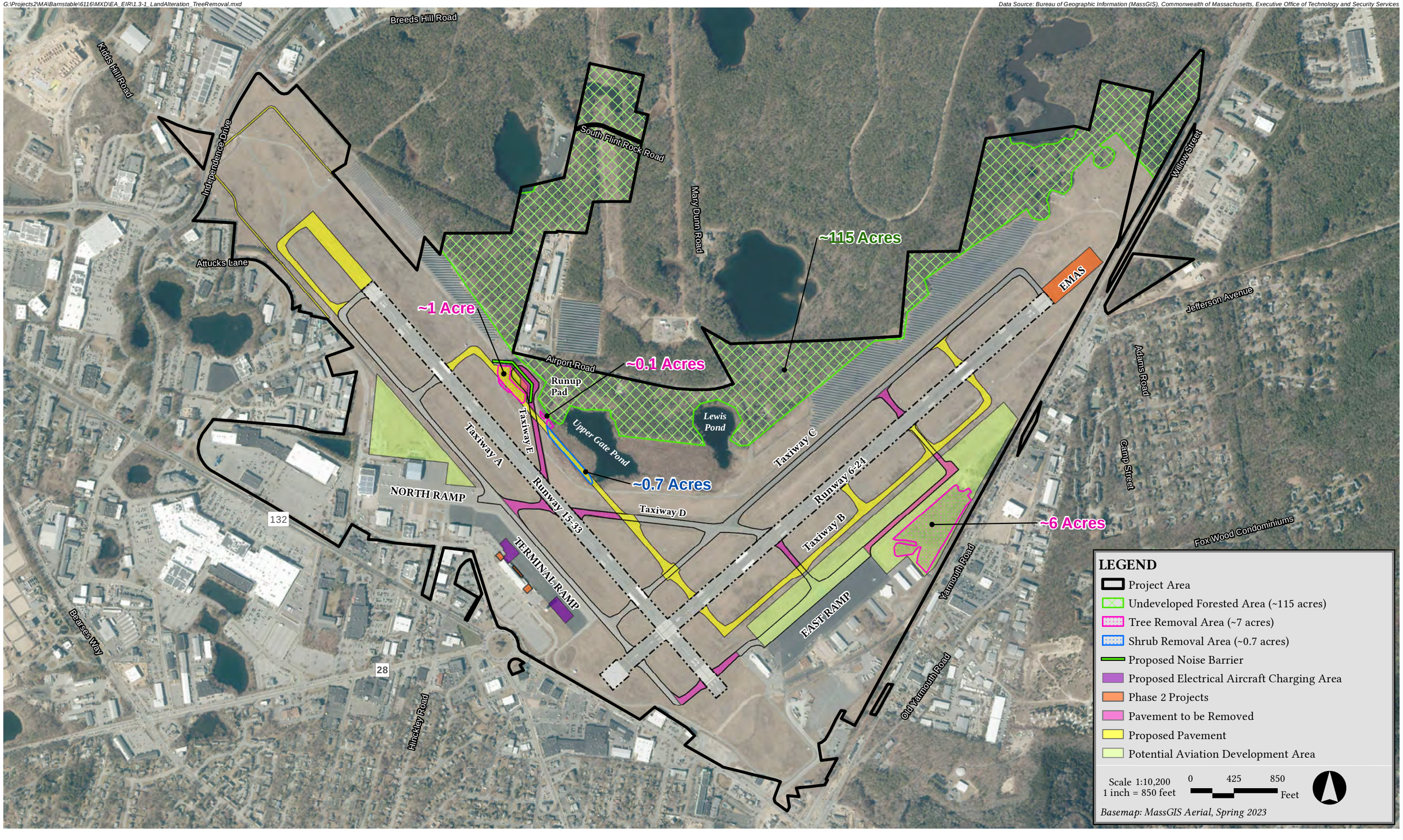

Figure 1.3-1

Land Alterations and Tree Removals

outward and upward into the runway approach. For obvious reasons, these "approach" surfaces need to be unobstructed for the safe operation of aircraft. For this reason, airports constantly manage the vegetation surrounding runway approach surfaces to keep them unobstructed while simultaneously preserving open space. Since runway approach surfaces are defined by the location and elevation of the runway end, it stands to reason that a runway extension will shift the location and elevation of its corresponding approach surface. However, the inner-approach surface to the proposed extension to Runway 15 is a highly developed industrial area with few trees so the proposed extension will not result in any additional (new) tree clearing beyond what is currently required for routine airspace maintenance.

Taxiway B is entirely within an existing developed area so the net result of shifting this taxiway will not result in any tree removal. Taxiway D will result in approximately 1.54 acres of tree clearing and 3.37 acres of brush removal, most of which will be converted to open grassland.

Table 1.3-2 Summary of Draft EA/EIR vs FEIR Impacts

	Existing	Reviewed in DEIR	FEIR Update
LAND			
Total Site Acreage (in acres)	639	639	639
New acres of altered land (in acres)	--	50*	49*
Acres of New Impervious Area (in acres)	167	40	40
New bordering vegetated wetlands alteration (in sf)		4,600	3,000
New other wetland alteration (in sf)		12,700 sf LUW 300 lf Bank	10,900 sf LUW 300 lf Bank
STRUCTURES			
Footprint of buildings (in acres)	121	0.25**	0.25**
Gross square footage	43,097	55,000	55,000
TRANSPORTATION			
Internal roadways (in acres)	902	+14***	+14***
Parking and other paved areas (in acres)	50	+26.4	+26.4
Vehicle trips per day	88	+70 - 171****	+70 - 171****
Parking spaces	1,135	0	0
Other altered areas (in acres)	27	--	--
Undeveloped areas (in acres)	460	-40	-40
WASTEWATER			
Water Use (Gallons per day [GPD])	7,000	--	--
Water withdrawal (GPD)	7,000	--	--
Wastewater generation/treatment (GPD)	13,000	--	--

* Includes calculations of both vegetation converted to impervious surface and temporary impacts due to grading of grass areas to remain grass.

** This number does not include potential hangars which may be up to a total of 5 acres. These 5 acres overlap with the impervious surface number under "other paved areas."

*** Paved apron and ramp space is included in" other paved surfaces."

**** The Airport Master Plan includes a 100% growth scenario (increase in 200 peak hour passenger design capacity). Increased trips represent between a 0.51% and 1.30% increase in daily and peak hour volumes, respectively, along the major travel routes.

1.4 Future Project Design Review Processes

Airport projects are funded via a state and federal funding allocation process that occurs years before MEPA review and is typically funded in three separate phases, Planning, Design/Permitting, and Construction through the Capital Improvement Plan (CIP) process covering a five-year period. Additionally, because this EA/EIR document describes projects over a longer period, such as a 20-year Master Plan as described above, design for these infrastructure projects is limited to a conceptual, pre-25% design level. Efforts such as stormwater management modeling require a more completed design which is quite simply, not available nor feasible at this time of document preparation due to funding timing and considerations.

Because certain information as requested in the Certificate on the Draft EA/EIR is not available until further engineering design is completed for specific projects upon receipt of funding, it is proposed that a supplemental submittal be prepared for each major project documenting compliance with the Massachusetts Stormwater Standards and Greenhouse Gas Emissions requirements via modeling and calculations though a Notice of Project Change (NPC) and the provision of final impact numbers, regardless of whether or not they exceed a new MEPA review threshold or change more than 25% (per MEPA requirements under 301 CMR11.10 (6) Secretary's Consideration of Environmental Consequences). This process would be completed in parallel with Cape Cod Commission review, via an amendment process. The major projects proposed for this process are:

- Taxiway B
- Taxiway D
- Runway 15 Extension
- East Ramp Hangar Development in current unaltered areas only

The North Ramp area is primarily paved or previously disturbed and is not included in the above list for these reasons.

In this document, given the conceptual level of design, the Airport is making commitments for compliance with regulations and standards and describing the design approach conceptually for the above referenced projects. It is anticipated that the NPC would provide additional details and documentation such as stormwater management calculations demonstrating compliance with standards and consistency with the conceptual design such as requested on p. 26 of the Draft EA/EIR Certificate. Furthermore, for any new buildings, expansions, or additions, the Proponent will commit:

- High performing envelope that complies with the 2023 Stretch code envelope performance requirements;
- 100% heat pump space heating;
- Energy recovery ventilation per the 2023 Stretch code update;

- Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed;
- Roof to be constructed PV-ready;
- Installed electric vehicle (EV) charging spaces, quantity to be determined;
- EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.

1.5 Anticipated Permits and Approvals

The Projects are anticipated to require the following permits and approvals from local, state, and federal agencies listed in Table 1.5-1.

Table 1.5-1 Permits and Approvals Required for the Project

Permit/Review	Agency	Status and Relevant Project(s)	Measures to Comply with Applicable Performance Standards
Federal			
National Environmental Policy Act (NEPA)	Federal Aviation Administration (FAA)	Draft EA filed December 2023, final EA to be filed summer/fall 2024	An Environmental Assessment (EA) and associated Finding of No Significant Impact (FONSI) and subsequent agency action (federal finding) will be prepared in accordance with FAA Order 1050.1F.
Section 404 General Permit (Pre-Construction Notification)	Army Corps of Engineers (Corps)	PCN to be filed (Date TBD) for Taxiway D only	Selection of the least environmentally damaging practicable alternative including measures designed to avoid, minimize, and mitigate impacts to wetlands and other waters of the U.S.
Coverage under National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit	Environmental Protection Agency	Notice of Intent (NOI) to be filed one to two months prior to start of construction of each Projects over 1 acre of impact.	Stormwater Pollution Prevention Plan to be developed and implemented, involving series of construction BMPs to reduce potential for erosion and sedimentation.
FAA planning, design, and safety Standards: AC 150/5300-13B Airport Design	Federal Aviation Administration (FAA)	Conceptual design complete. Final construction design to be completed in permitting phase.	Taxiways / runways will be designed to comply with FAA requirements.
Table 1-Section 7 Consultation under U.S. Endangered Species Act	Department of Interior, U.S. Fish and Wildlife Service (USFWS)	FAA lead agency to consult with USFWS when EA is filed	The Project will be reviewed by the USFWS through the Section 404 permitting process with the Corps as well as NEPA.
Review under Section 106 of the National Historic Preservation Act (36 CFR 800)	FAA, U.S. Army Corps of Engineers; Tribal Consultation; State Historic Preservation Officer (SHPO)	FAA lead agency in consultation with SHPO	The Project has prepared a Archaeological Avoidance Plan. Consultation will be led by FAA and a determination of "no effect" is anticipated to be made by the MA SHPO based on consultation letter.

Table 1.5-1 Permits and Approvals Required for the Project (Continued)

Permit/Review	Agency	Status and Relevant Project(s)	Measures to Comply with Applicable Performance Standards
State			
Individual 401 Water Quality Certificate	Department of Environmental Protection (MassDEP)	WQC to be filed (Date TBD) for Taxiway D	Similar BMPs are to be employed as required by NPDES and the Corps and under the Massachusetts Wetlands Protection Act. Avoid, minimize, and mitigate impacts to wetlands and waterbodies.
Wetlands Protection Act M.G.L. c. 131 § 40	MassDEP	Notice of Intent To be filed Date TBD for Taxiway D	Avoid, minimize, and mitigate impacts to wetlands and other waterbodies including a minimum of 1:1 replication for unavoidable fill placed in BVW
M.G.L. c. 90 § 35B, 780 CMR 111.7	Massachusetts Department of Transportation (MassDOT) – Aeronautics Division	Conceptual design complete of runway/taxiways complete. Final construction design to be completed in permitting phase.	Taxiway / runway surfaces will be designed to comply with MassDOT requirements.
Review under Massachusetts Endangered Species Act	Natural Heritage and Endangered Species Program	No impacts anticipated. MESA Checklist filed if necessary.	Avoid and minimize impacts to state listed species habitats.
State Historic Register Review (Chapter 256)	Massachusetts Historical Commission (MHC)	FAA to consult with MHC upon submittal of the EA.	The Project will be designed to avoid or minimize impacts to historic resources. Consultation will be led by FAA and a determination of "no effect" is anticipated to be made by the MA SHPO based on consultation letter.
Regional			
Development of Regional Impact	Cape Cod Commission	DRI application to be submitted upon completion of MEPA.	The Project will demonstrate compliance with applicable Goals and Objectives in the CCC's Regional Policy Plan.
Local			
Wetlands Bylaw Order of Conditions	Barnstable Conservation Commission	Notice of Intent to be filed Date TBD For Taxiway D	Avoid, minimize, and mitigate impacts to wetlands and other waterbodies including a minimum of 1:1 replication for fill placed in BVW and compensatory flood storage. Similar BMPs to be employed during construction as required by NPDES, the Corps, and MassDEP to prevent erosion and sedimentation that could result in discharges to wetlands.

Chapter 2.0

Alternatives Analysis

2.0 ALTERNATIVES ANALYSIS

This chapter describes the additional alternatives considered for a discrete selection of projects identified in the MEPA Certificate on the Draft EA/EIR for further analysis and the rationale behind the selection of the updated preferred alternatives. The FAA's primary focus is on airfield safety, and their funding for airport capital improvements focuses on meeting FAA safety standards. **In fact, the FAA is making a significant investment in projects to reconfigure airports that do not meet current FAA airfield design standards.** Airfield facilities that do not meet minimum FAA design standards need to be prioritized in the airport's capital improvement program. The list of proposed projects under the Master Plan is presented in the Draft EA/EIR and again in Section 1.2 of this FEIR. A summary of design alternatives for each project is presented in Table 4.1 of the Draft EA/EIR. Per the MEPA Certification of the Draft EIR, additional alternative analyses were required for the following projects:

- Taxiway D;
- Noth and East Ramp Hangar Development Areas;
- Runway 6-24 RSAs Improvement; and
- Terminal Building Improvements.

Taxiway D Alternatives evaluated in the Draft EA/EIR included the No Build and four build alternatives to improve multiple existing non-standard geometry conditions (see **Table 4.1-4 in Chapter 4.0 of the Draft EA/EIR**). Alternative 4 in the Draft EA/EIR is further assessed in more detail below to address MEPA comments in the Certificate. An additional alternative (Alternative 5) is evaluated herein and selected as the updated Preferred Alternative due to reduction in wetland resource area impacts.

MEPA also requested assessment of additional alternatives relative to the location of proposed aeronautical development areas, East Ramp and North Ramp. The alternatives analysis for the Phase 2 Master Plan Projects (i.e., terminal improvements, Runway 6 Safety Area) are discussed again below per the MEPA certificate scope but was provided as an Appendix to the Draft EA/EIR. Similarly to the alternatives analysis of the Phase 1 projects discussed in Chapter 4.0 of the Draft EA/EIR, the following additional alternatives analysis presents considered alternatives in comparative form based on the information and analysis presented in Chapter 5.0, Affected Environment and Chapter 6.0, Environmental Consequences, of the Draft EA/EIR. Consistent with this goal, the following analysis on alternatives considers what effect changing the parameters of a project, or components, will have on the environment. The following information is provided within this alternatives analysis:

- Information on the No- Action (i.e., No-Build) Alternative;
- Reasonable alternatives to the Proposed Action, including alternatives that the agency eliminated from detailed study and reasons for their elimination, and

- The Proposed Action (Preferred alternative or alternatives, if one or more exists).

FAA Order 5050.4B, paragraph 706 (d)(7), notes that when an alternative is considered but judged "not reasonable," the EA should concisely explain why the sponsor or FAA eliminated the alternative from further consideration.

2.1 Taxiway D Alternatives

As noted in the National Plan of Integrated Airport Systems (NPIAS) (2023-2027), the FAA helps airports maintain safe conditions by developing airport design standards based on airport design categories that apply to facilities throughout the system. The FAA airport design standards have evolved over time and provide the necessary dimensions to accommodate aircraft operations, such as with the standards for runways and taxiways. Airports agree to meet these FAA design standards when they accept AIP funds for capital improvements to their facilities. The FAA standards address physical layout characteristics, such as runway length and width, separation between runways, taxiways and taxilanes, RSAs, lighting, signs, and markings. The standards also address material characteristics (e.g., pavement, wiring, and luminance of lights) and issues, such as ARFF equipment, training and operations, snow removal plans and supporting equipment, and wildlife hazard management.

Airport design standards are established by the Federal Aviation Administration (FAA) through the issuance of various guidance documents including, but not limited to, FAA Advisory Circulars (AC). FAA AC 150/5300-13B contains FAA standards for airport design for runways, taxiways, aircraft parking aprons, and other airfield systems and facilities. FAA design standards are based on the type of aircraft using a particular airfield facility. Based on the Cape Cod Gateway Airport's latest approved Airport Master Plan study (2022), the minimum runway-taxiway separation distance is 400 feet, measured from the centerline of the runway to the centerline of the taxiway. However, for the purposes of this additional analysis, a runway/taxiway separation distance that does not meet minimum FAA design standards but avoids all wetland resource area impacts was further assessed at the request of MEPA and is discussed below (Alternative 4).

FAA design standards require the proposed Parallel Taxiway "D" to achieve a runway to taxiway centerline separation distance of 400 feet. This analysis meets the same conclusion as the discussion relative to Alternative 4 presented in the Draft EA/EIR that the separation distance (taxiway centerline to runway centerline) cannot be reduced from the recommended 400 feet for Taxiway D to avoid all impacts to wetland resource areas.

The location of this new taxiway, fixed by FAA design standards, results in unavoidable impacts to BVW, LUW, and Bank. **The Airport re-evaluated the Preferred Alternative 2B from the Draft EA/EIR and reduced BVW impacts by over 50% through the removal of the perimeter access road from the design (new Alternative 5).** No other practicable alternative is available that has less adverse impact to the aquatic ecosystem.

2.1.1 Taxiway D Alternative 4 – 300' Separation Distance

This Taxiway D Alternative ("Shifted Alt") a runway/taxiway centerline separation distance of **300 feet** would not impact BVW, LUW and Bank (refer to **Figure 2.1-1** for a graphical representation of this alternative taxiway layout.) This proposed alternative would circumnavigate Upper Gate Pond without impacting BVW, LUW and Bank. The "shifted" alternative layout was designed at a conceptual phase level (e.g., 25% conceptual design stage). In this alternative, the taxiway shifts closer to the runway by approximately 100 feet thereby providing a Runway to Centerline to Taxiway to Centerline separation distance of 300 feet, versus the required FAA centerline separation distance of 400 feet. **This alternative is not feasible because it does not meet FAA safety standards.** Other changes to impervious surface (an increase) and reductions in the area of shrub removal along with overall land disturbance are summarized in Table 2.1-1 below. *The analysis demonstrates the distance between Runway 15-33 and TWY D that would result in no impact to BVW, LUW and Bank*. This alternative would avoid all impacts to wetland resource areas.

Table 2.1-1 Taxiway D Alternative 4 Comparison with DEIR Preferred Alternative

	Preferred Alternative 2B presented in the Draft EA/EIR	300 ft Separation ("Shifted Alt")	Change from DEIR Pref. Alt. 2B
Total Pavement	294,129 sf	295,450 sf	+1,321 sf
New Pavement[1]	59,686 sf	61,007 sf	+1,321 sf
Shrub Removal	114,041 sf	73,859 sf	-40,181 sf
Tree Removal	58,370 sf	58,370 sf	-
Net Grass Area	550,510 sf	595,151 sf	+44,641 sf
Work Area	873,221 sf	877,680 sf	+4,459 sf

1: Existing Impervious surfaces = 234,443 SF

This alternative is rejected as an infeasible alternative and does not meet the Purpose and Need of improving safety and meeting design standards. Recent FAA decisions including funds allocated to Taunton Municipal Airport to shift the taxiway further away from Runway 12-30 by 39 feet to meet the airport's runway/taxiway centerline separation distance indicate that meeting safety standards is paramount to airport design. Accordingly, FAA will not fund the construction of a new parallel taxiway that does not meet standard runway/taxiway centerline separation distance of 400 feet.

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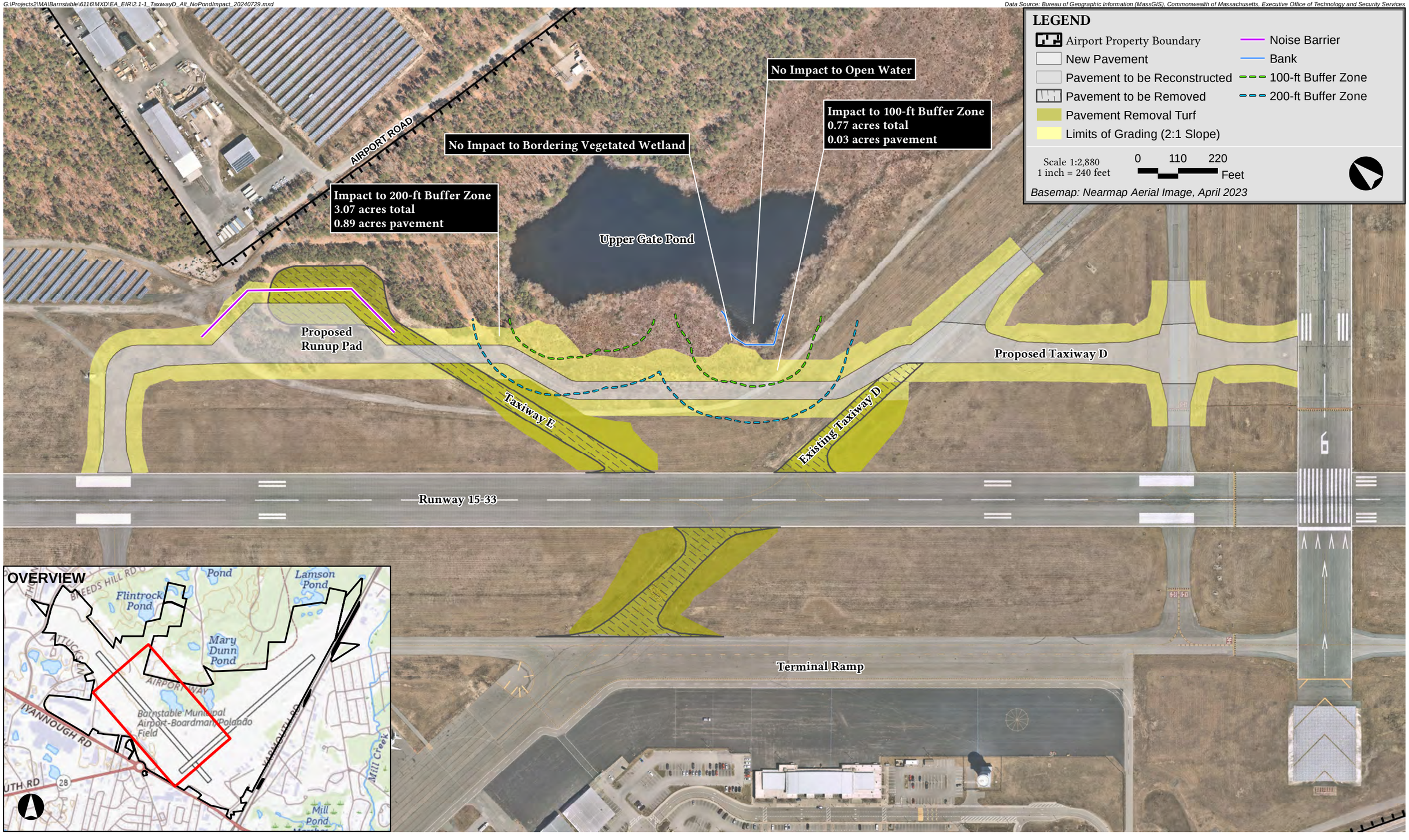
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 2.1-1
Taxiway D 300-Foot Separation Alternative

2.1.2 Taxiway D Alternative 5 – No Service Road (Updated Preferred Alternative)

In this alternative, the same alignment and runway to taxiway separation distance of 400 feet is maintained, along with a 2:1 side slope in the vicinity of Upper Gate Pond. The area to the north of the taxiway which consists of the 37.5 foot wide Taxiway Safety Area (TSA) and the 12 foot-wide perimeter vehicular service road has been narrowed to just include the TSA (see **Figure 2.1-2**). The service road will terminate east of Upper Gate Pond and vehicular access to this portion of the airfield will be either via Airport Road to the north of the project area or via Taxiway D. This enables a taxiway that still meets standards including TOFA and TSA but reduces wetland impacts. Airport operations will be minimally impacted, and vehicular access will be restricted in this section of taxiway unless coordinated with the Air Traffic Control Tower.

This Alternative would result in a 35% reduction of permanent fill of 1,600 sf of BVW from the Preferred Alternative 2B presented in the Draft EA/EIR, from 4,600 sf to 3,000 sf. Land Under Water (LUW) impacts would be reduced from 13,700 sf to 12,400 sf; and impacts to 300 linear feet (LF) of Inland Bank as a result of the realignment of Taxiway D. These impacts have been avoided and minimized to the maximum extent practicable through utilization of 2:1 side slope design with an engineered slope option, see Table 2.1-2. As discussed above, to meet FAA safety standard designs for taxiway to runway separation, impacts to wetlands cannot be completely avoided.

Table 2.1-2 Taxiway D Alternative 5 Reduction in Wetland Resource Impacts

	Impact from Preferred Alternative 2B presented in the Draft EA/EIR	Impact TWD Alt. 5 ("No Service Road")	Change
BVW	4,600 sf	3,000 sf	-1,600 sf
Land Under Water (LUW)	13,700 sf	12,400 sf	-1,300 sf
Inland bank	300 lf	300 lf	-

Other positive changes with the new preferred alternative selected in the FEIR includes a reduction to shrub and tree removal areas, net grass area, and the overall disturbance within the footprint of the work area is summarized in Table 2.1-3 below.

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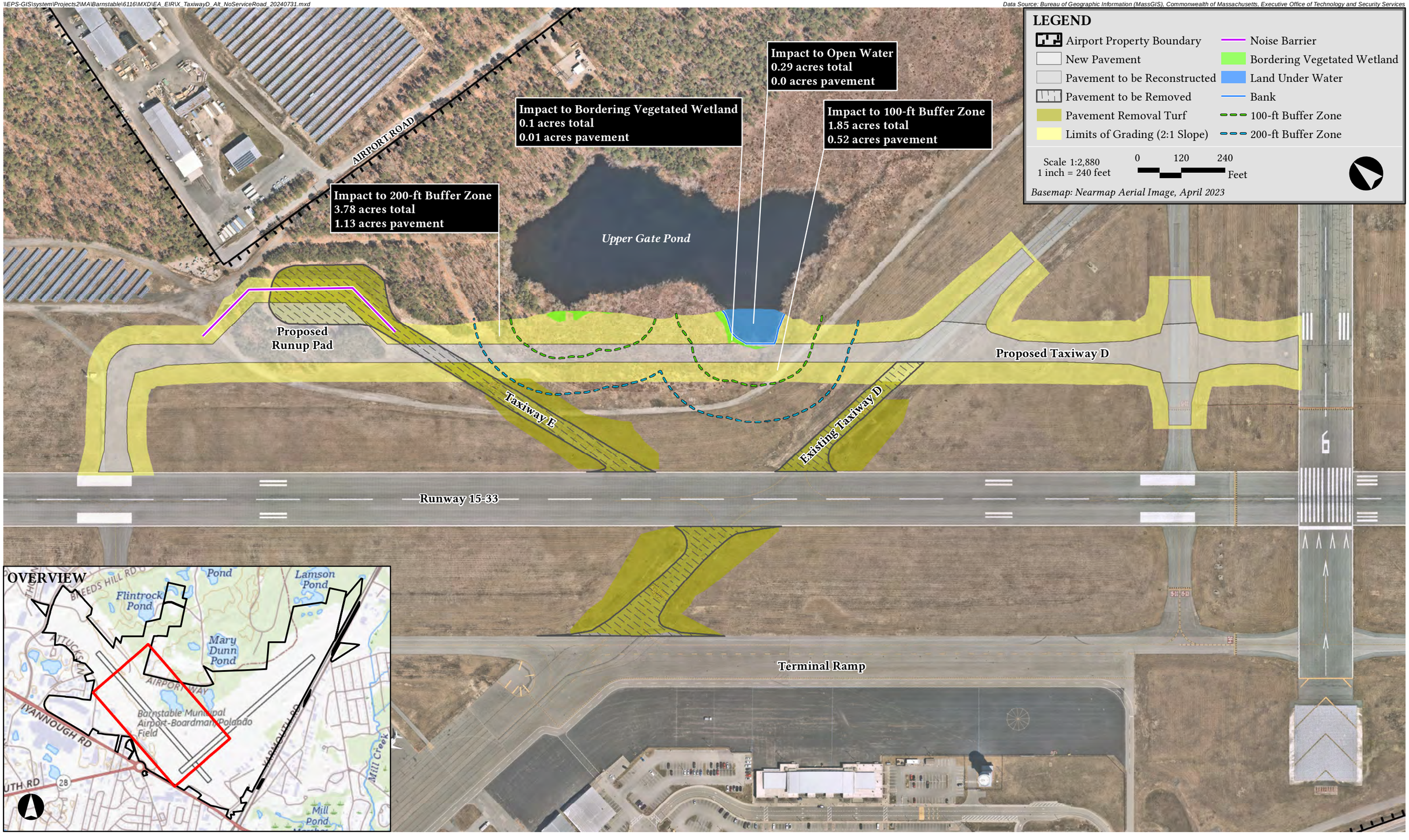
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 2.1-2
Taxiway D No Access Road Alternative

Table 2.1-3 Taxiway D Alternative 5 Comparison with DEIR Preferred Alternative

	Preferred Alternative 2B presented in the Draft EA/EIR	TWD Alt. 5 ("No Service Road")	Change from DEIR Pref. Alt. 2B
Total Pavement	294,129 sf	294,129 sf	-
New Pavement[1]	59,686 sf	59,686 sf	-
Shrub Removal	114,041 sf	105,748 sf	-8,292 sf
Tree Removal	58,370 sf	58,220 sf	-150 sf
Net Grass Area	550,510 sf	547,351 sf	-3,159 sf
Work Area	873,221 sf	877,680 sf	-11,601 sf

1: Existing Impervious surfaces = 234,443 SF

The appropriate mitigation measures to demonstrate consistency with the WQC regulations and wetland mitigation requirements are discussed in Section 5.1 along with the location of proposed wetland replication. Additionally, construction means and methods such as steel sheet piling coffer dams and turbidity curtains can isolate the work area in water and avoid impacts to the remainder of the pond. Material handling and disposal of dredged sediments are discussed further in Section 5.1.

2.2 Alternative Analysis for North and East Ramp Hangar Development

The following alternatives analysis reviews the need for hangar development, based on the current forecasted demand for the Airport. This component to the airport infrastructure is needed to meet an anticipated industry trend for aircraft storage and is not a an "increase in capacity" to induce more demand for airplane and vehicular travel. The 2010 Environmental Notification Form and 2011 Draft EIR for the 2008 Airport Master Plan evaluated alternatives for hangar development in detail. As the preferred alternative in the 2011 assessment remains the same the 2020 Master Plan, that analysis remains valid as those areas have not yet been built out. Additionally, this analysis takes into consideration the evolution of aircraft and future hangar development should consider longer wingspans, which are a feature of modern single- and multiengine- aircraft. The typical T-hangar door width is 42 feet and modern ADG I aircraft have wingspans of 44 to 48 feet (e.g., Piper M350 and Piper Malibu).

GA hangars at an airport are planned for both based and itinerant aircraft. Requirements are calculated based on the size and quantity of aircraft based at the Airport. While each aircraft will vary in size, the following planning factors were used to calculate the approximate hangar space requirements for aircraft based at the Airport:

- 1,200 SF for Single Engine and Rotor Aircraft
- 1,600 SF for Multi-Engine Aircraft
- 3,200 SF for Jet Aircraft

When calculating hangar demand, it is assumed that 70 percent of single engine and 35 percent multi-engine aircraft will be stored in individual hangars. It is also assumed that 25 percent of single engine aircraft, 60 percent of multi-engine aircraft, and 100 percent of jet aircraft will be stored in conventional hangars.

The forecast for based aircraft reflects a 0.4 percent decline in total based aircraft based on the historical trends of the Airport. These trends represent a small increase in small jet growth but the consolidation of light GA aircraft because of flying clubs and fractional ownership. More people will use based aircraft, which is why based aircraft numbers may decline, but aircraft operations increase. Based on the forecasting detailed below in Table 2.2-1, there is an existing shortage of conventional hangar space, which needs to be accommodated. Should demand exceed what is forecast, it is recommended to plan for six individual hangars and up to eight new conventional hangars to account for unplanned demand for new hangars and new businesses.

Table 2.2-1 Aircraft Hangar Demand

Year	Facility Demand	Current Provision	Additional Need
Baseline			
Individual Hangars	28	33	0
Conventional Hangars	27,860 sf	24,850 sf	3,010 sf
2025			
Individual Hangars	27	33	0
Conventional Hangars	28,220 sf	24,850 sf	3,750 sf
2030			
Individual Hangars	25	33	0
Conventional Hangars	27,620 sf	24,850 sf	2,770 sf
2040			
Individual Hangars	24	33	0
Conventional Hangars	30,220 sf	24,850 sf	5,370 sf

Source: McFarland Johnson 2020

In the analysis below, a No Build Alternative, Alternative 1: Northfield Development and Alternative 2: North and East Ramp Development are identified for proposed hangars and other development, considering impacts to land alteration and impervious area.

2.2.1 Hangar and Ramp Development – No-Build Alternative

The No-Build Alternative for hangar and ramp development would not add additional aircraft parking and hangar space to the Airport. The No-Build Alternative would not meet the current need of the airport users identified above.

2.2.2 Alternative 1: Northfield Development

This alternative considers the Northfield development area to the north of the proposed Taxiway D alignment in the vicinity of Upper Gate Pond and Lewis Pond (see **Figure 2.2-1**). Given runway and taxiway safety area operational setbacks, property available to be developed outside of the East Ramp or North Ramp is limited to undisturbed areas on the northern side of the airfield. Development of this portion of the Airport could allow for the construction of 178,200 sf of corporate and general aviation hangars. Alternative 1 would result in a net increase of disturbance of 10.5 acres over the Preferred for just the hangars and ramp areas alone. Development may also impact wetland resource areas of Upper Gate and Lewis Ponds. Additionally, this area is proximate to several active municipal supply wells used periodically. It would require additional infrastructure through the creation of a suitable access road via Mary Dunn Road or along the northern airfield perimeter road. It would also require the construction of a separate secure entrance, security fencing and automated gates, security lighting, and other associated appurtenances. These security concerns would add substantial increased costs.

Alternative 1 would also represent a large change in aircraft travel patterns throughout the Airport that would need to be evaluated by the FAA. Impacts to natural resources were deemed sufficient to eliminate Alternative 1 from further consideration.

2.2.3 Alternative 2: East and North Ramp Development – Preferred Alternative

The relocation of Taxiway B would open additional space to the areas of the airport that are currently in use for aeronautical activities at the East Ramp. Hangars at the East Ramp would have all water and sewer service provided by existing mains installed in 2022 along Mary Dunn Way. Connections to these mains would be required by the individual hangar developers.

The majority of the North Ramp is already paved and has taxi lane access, making it an ideal location for airside development in close proximity to the terminal building. No wetland impacts are associated with this alternative.

These ramp development areas include future space for transient aircraft parking as well as additional hangars or other aeronautical businesses and will be developed as opportunities for growth arise. The alternatives analysis, and summary Table 2.2-2 below, supports the selection of the Preferred Alternative and includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.

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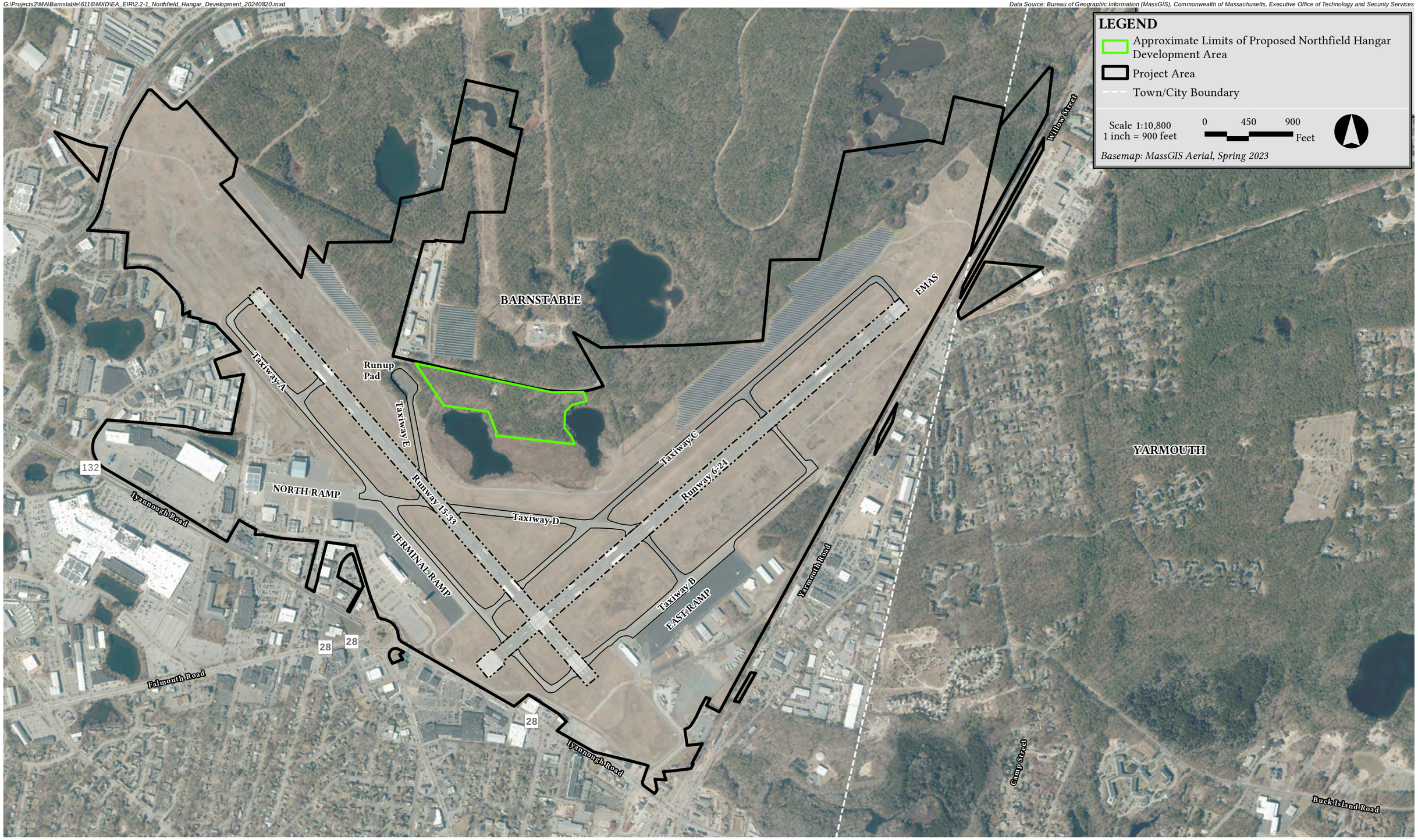
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 2.2-1
Alternative 1 - Northfield Hangar Development

Table 2.2-2 Hangar Development Summary

	Alt. 1 Hangars within North Field Area Upper Gate and Lewis Pond	Alt. 2 Hangars within East and North Ramp Area of Airport (Pref. Alt)	Difference in Impact of Preferred Alt. from Alt.1 (Pref Alt).
Total Area	15 acres	15 acres	-
New Pavement[1]	15 acres	14.5 acres	-0.5 acres
Existing Disturbed Areas[2]	0 acres	4.5 acres	-10.5 acres
Existing Pavement	0 acres	0.5 acres	+0.5 acres
Tree / Vegetation Removal	15 acres[1]	6.6 acres	-8.4 acres
Impacts to Wetland Resource Areas (e.g., BVW)	Yes	No	No wetland impacts associated with the Alt.2

[1] Hangar buildings would need to be located beyond the Building Restriction Line (BRL) for the RVZ within this area.

[2] Areas categorized as previously disturbed include service roadways, disturbed grass areas and existing pavement.

2.3 Runway 6-24 Runway Safety Area (RSA) Improvement

The following alternatives to provide full dimensional Runway 6-24 RSAs were considered in accordance with **FAA Order 5200.8, Runway Safety Area Program**. The Runway 24 end currently has a non-standard Runway Safety Area (RSA) that does not fully meet the FAA standard sizing of 800 feet by 1,000 feet per FAA AC 150/5300-13B. An EMAS is built at the end of a runway to reduce the severity of the consequences of a runway overrun.

2.3.1 Alternative 1 – No-Build Alternative

An EMAS is built at the end of a runway to reduce the severity of the consequences of a runway overrun. The No-Build Alternative for Runway 6 would not add an Engineered Material Arresting System beyond the existing Runway 6 departure end (near the Runway 24 threshold) as it is not feasible to provide full dimension RSA for Runway 6-24. The No-Build Alternative would not provide safety enhancements. An EMAS provides an equivalent level of safety to a full dimension RSA.

While the No-Build Alternative does not enhance safety by adding EMAS, it is important to note that the existing RSA determination (approved by the FAA on September 13, 2000) deemed Runway 6-24 to be safe. The FAA determination remains in effect until such a time that changes to the operations, FAA standards, or local conditions are made from those at the time the RSA determination was signed.

2.3.2 Alternative 2 – Full Dimension RSA

This alternative would provide a full dimension (1,000 feet beyond each runway end by 500 feet in width) RSA with no modifications to location of the runway ends. This would require the relocation of the railroad tracks, Yarmouth Road, and Iyannough Road/Route 28 and impacts residential areas and businesses. Extensive additional land acquisition would be required to accommodate not only the full dimension RSA, but also for the ROFA, relocation of the roadways and railroads, and the Airport access road. The land acquisition and construction costs far exceed the maximum feasible cost threshold of $17.5 million for RSA improvements. This alternative was dismissed due to the immediate vicinity community and infrastructure impacts that would be extremely disruptive to the Towns of Barnstable and Yarmouth, as well as anticipated high costs exceeding the allotted budget.

2.3.3 Alternative 3 – Length Reduction of Runway to 4,028 feet

As the primary visual flight rules (VFR) runway, reducing the Runway 6-24 pavement length would reduce usability of the Airport and is not feasible. Runway length directly impacts an aircraft's performance during takeoff and landing. Reduced runway length can result in reduced safety margins for takeoffs and landings. Should Runway 6-24 length be reduced to meet full dimension RSA standards, the operational limitations to Runway 6-24 would shift operations to Runway 15-33 and put disproportionate burden on the neighborhoods near the Runway 33 end.

2.3.4 Alternative 4 – Relocation of Runway 6-24

Various configurations of relocating or realigning Runway 6-24 were evaluated to determine if improvements in the RSA could result from this activity. Relocating Runway 6-24 to provide full dimension RSAs would move Runway 6-24 north and east and require relocation of parallel Taxiway C, the ground mounted solar array, the ATCT, and portions of the Terminal Ramp. Removing the existing solar farm (6.7-megawatt facility that offsets approximately 5,000 metric tons of CO2 emissions annually and reduces electric costs over $400,000 annually) would be necessary and would negatively impact existing property leases with Eversource. Additionally, the threshold of Runway 6 in this alternative would start in the middle of Runway 15-33, which is a non-standard geometry condition and is not recommended by the FAA.

Constructing a new 5,425-foot-long runway would cost approximately $18-20 million, which is over the maximum feasibility for RSA improvements cost. Realigning Runway 6-24 would create similar impacts and high costs to the relocation of the runway. These cost estimates do not include final design, environmental permitting, mitigation, clearing of trees for the runway and RSA (and associated coordination with the Cape Cod Commission), terrain grading, property acquisition, full-length parallel taxiway construction, relocation of approach lighting and instrumentation, or airspace review and approach obstruction removal.

Additionally, there would be impacts to several wetlands, ponds, and vernal pools associated with this alternative. Therefore, this alternative was deemed not feasible and was dismissed due to community, environmental, and cost impacts.

2.3.5 Alternative 5 – Declared Distances

Declared distances (useable runway length) are already applied to Runway 6-24. Similar to reducing the Runway 6-24 length, changing the declared distances even further would reduce the useable runway length (approximately 4,376 feet for Runway 6 landings and 4,528 feet for Runway 24 landings), which is not feasible given the need for a longer runway. Should declared distances be applied to meet full dimensional RSA standards, the operational limitations to Runway 6-24 would shift larger operations to Runway 15-33, which would put undue burden on the neighborhoods near the Runway 33 threshold, including an increase in noise levels. This alternative was dismissed due to the immediate vicinity community impacts.

2.3.6 Alternative 6 – EMAS (Preferred Alternative)

This alternative proposes the construction of a 200-foot by 400-foot engineered material arresting system (EMAS) on the approach end of Runway 24 to enhance safety for aircraft landing on Runway 6. An EMAS is built at the end of a runway to reduce the severity of the consequences of a runway overrun. This alternative would correct the Runway 24 end's existing non-standard RSA that does not fully meet the FAA standard sizing of 800 feet by 1,000 feet per FAA AC 150/5300-13B. An EMAS, such as the one located at the Runway 6 end, per FAA standards, provides an equivalent level of safety as a full dimension RSA and is considered a standard RSA. There would be no impacts to off-airport property including the adjacent railroad tracks, Yarmouth Road, and Iyannough Road/Route 28. Per the requirements of FAA Order 5200.8, *Runway Safety Area Program*, construction of a 200-foot by 400-foot (EMAS) on the approach end of Runway 24 would meet the requirements of a standard RSA.

2.4 Terminal Improvements Alternatives

The Master Plan analysis identified space and operational deficiencies within the Airport's Terminal Building. An overall deficiency of between 5,000 and 10,000 sf was recommended to meet projections for 150 peak hour passengers and an additional 20,000 to 25,000 sf recommended to meet the projected 200 peak hour passenger requirements.

Based on the 20-year planning horizon analysis in the Master Plan, the Terminal Building is deficient in space for: 1) Secure holdroom, 2) Security screening checkpoint and line space, 3) Outbound baggage screening and make up, and 4) Baggage claim and inbound baggage handling.

2.4.1 Terminal Alternative 1 – No-Build Alternative

Alternative 1, the No-Build Alternative, would not add additional space, square footage, to the Terminal building envelope. This Alternative would not result in impacts due to construction, including increase in impervious surface, building electrical and water use, and land/parking areas adjacent to the building. However, this alternative was dismissed because it would be unable to meet additional space requirements identified in the 150 peak hour passenger analysis. Alternative 1 is not deemed a viable long-term solution to accommodate the forecasted passengers and operational needs of the Airport Terminal building.

2.4.2 Terminal Alternative 2 (Preferred Alternative) – Phased Improvements to Functional Organization and Building Space

Alternative 2 would result in a combination of both reconfiguration of existing interior space and building additions to meet increased passenger and baggage demands. As noted in other alternatives, interior reconfiguration results in a smaller expansion of the Terminal building structure that would not allow for the reconfiguration of interior space. The reconfiguration proposed by this alternative would maintain the basic terminal organization: a single terminal with secure departures to the south, arrivals/non-secure departures to the north, with airline operations/ticketing in the center.

Alternative 2 reduces construction related impacts by providing a phased implementation to improve the Terminal building. A phased approach allows the Airport to implement improvements beginning with interior reconfiguration. As need arises, and as anticipated demand is realized in the future, the Airport is able to implement the second phase, which would include space additions to the Terminal building. This approach also has the benefit of implementing the Alternative as funding becomes available.

2.4.3 Terminal Alternative 3 – Interior Functional Organization Only

Alternative 3 does not propose construction of additional square footage to the building structure, only interior organizational and functional changes to the Terminal Building. In this Alternative, the function of the building is modified from a single terminal with departures and arrivals at each end, to a secure terminal to the south end (with both departures and arrivals/bag claim functions), and separate, non-secure terminal at the north end. The non-secure terminal building section would have its own departures and arrivals/bag claim functions for non-secure flights. This alternative achieves needed improvements to passenger flow and keeps secure arrivals/departures contained at one end of the terminal.

The capital and operational costs for creating both secure and non-secure baggage claim areas are not warranted by the level of air traffic; therefore, this alternative was dismissed.

Chapter 3.0

Groundwater & Sole Source Aquifer

3.0 GROUNDWATER AND SOLE SOURCE AQUIFER

As requested in both the MEPA Certificate and EPA's comment letter, this chapter details information about groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the project. A figure is also included which details the location of monitoring wells, public and private water supply wells, and surface water supply sources within five miles of the Project. Additionally, this chapter provides additional hydrogeologic information including potential contaminants, stormwater discharges, and construction activities, and the potential impacts, to existing or proposed public or private water supplies. Please note that the entirety of the Airport is connected via sewer to the Town of Barnstable wastewater treatment plant and there is no discharge of wastewater at the Airport.

3.1 Groundwater Depth, Contours, and Flow Directions

As detailed in the Draft EA/EIR Section 5.17.3 and the Phase IV report provided in **Appendix C,** starting in 2016 the Airport installed groundwater monitoring wells to investigate impacts to soil and groundwater from the historic use of airport firefighting foam (AFFF) containing Per- and polyfluoroalkyl substances (PFAS). Additional wells were installed on Airport in subsequent years to expand the testing in compliance with state regulations (M.G.L. c.21E and the MCP [3104 CMR 40.0000]) in support of the Phase II Comprehensive Site Assessment (RTN4-26347). See **Figure 3.1-1** for the location of these wells. Using data collected from these wells, the Airport's Licensed Site Professional (LSP) developed a water table map specific to the Airport property based on data taken on April 27, 2020). As indicated on **Figure 3.1-2,** groundwater flows onto the Airport property from the west and northwest, migrates to the southeast, and exits the property at the southeast corner of the Airport. Please see **Figure 3.1-3** for the location of public and private supply wells, and surface water supply sources within 5 miles of the Airport.

Groundwater contours were developed by the U.S. Geological Survey as part of their regional groundwater model for the Sagamore lens aquifer that includes the area of Hyannis in which the Airport is located. These groundwater contours were also used as they provide broader information regarding the migration of groundwater at the Airport, and in upgradient and downgradient areas, thus evaluating how groundwater flows across the Airport and downgradient towards the Maher Well field. The Cape Cod Commission also maintains a series of groundwater level monitoring wells with monthly data available on the web at https://capecodcommission.org/our-work/cape-cod-groundwater-levels/ and also provide historical context for year to year fluctuations in the regional water table.

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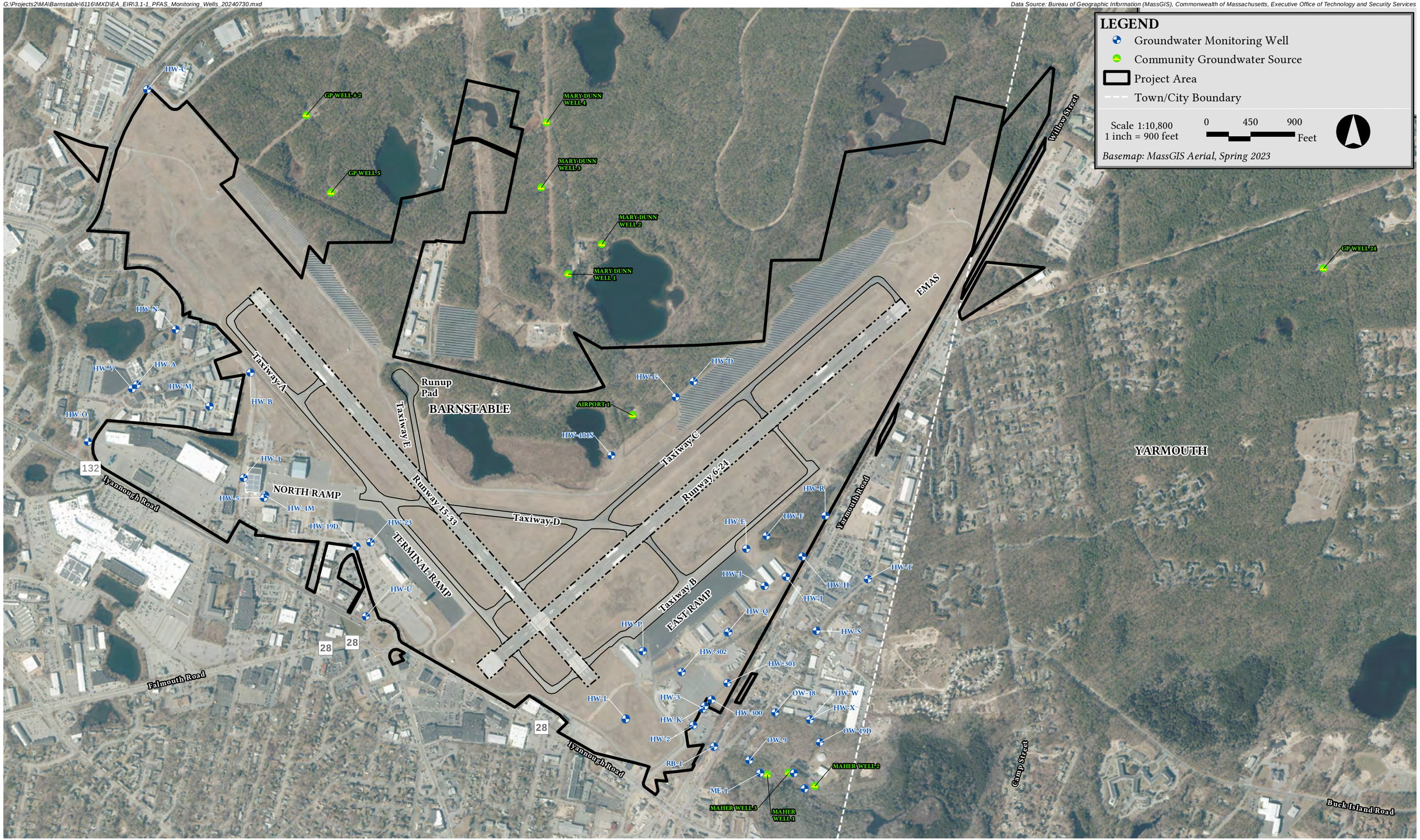
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport **Barnstable, Massachusetts**

Figure 3.1-1
Groundwater Monitoring Wells

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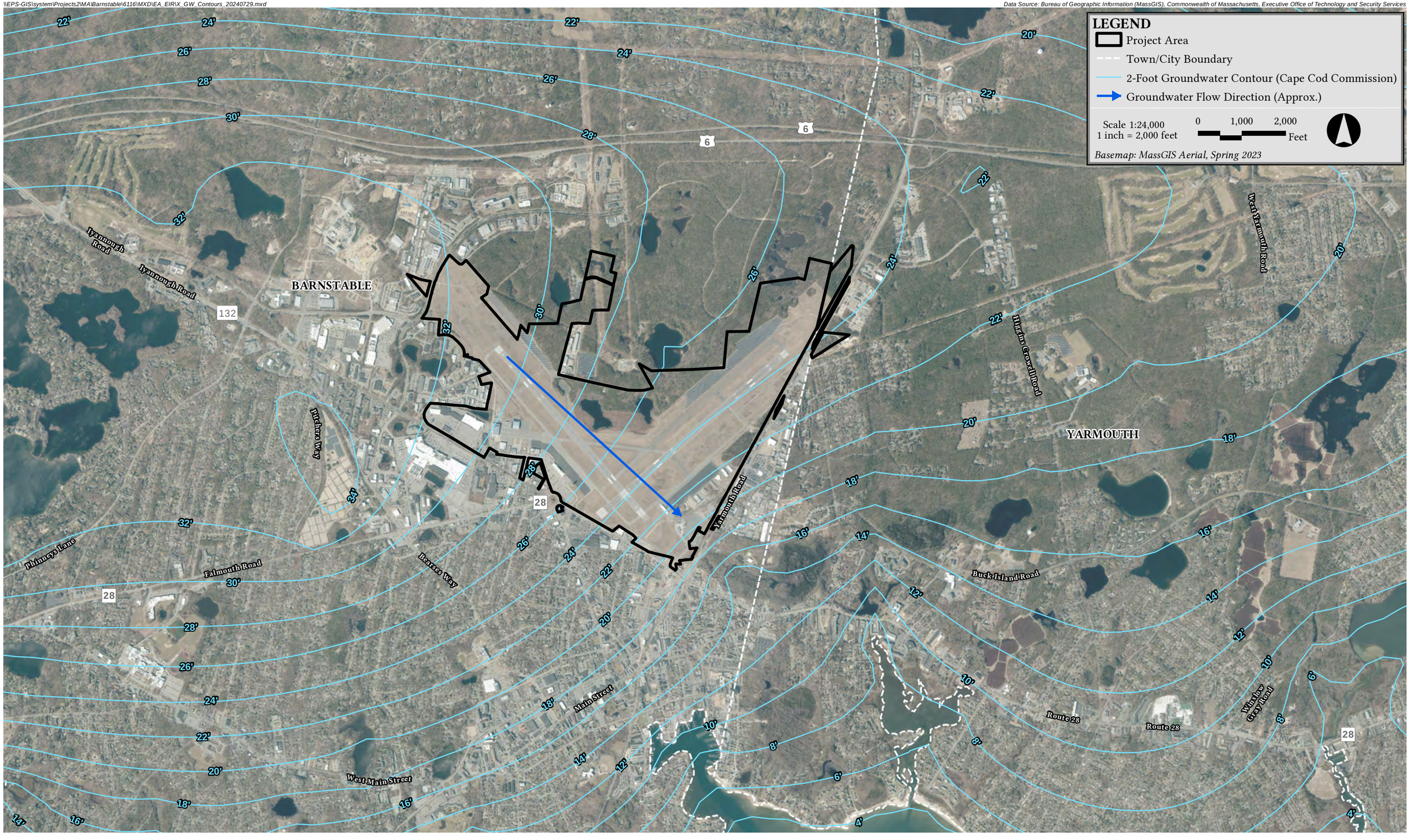
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 3.1-2
Groundwater Contours

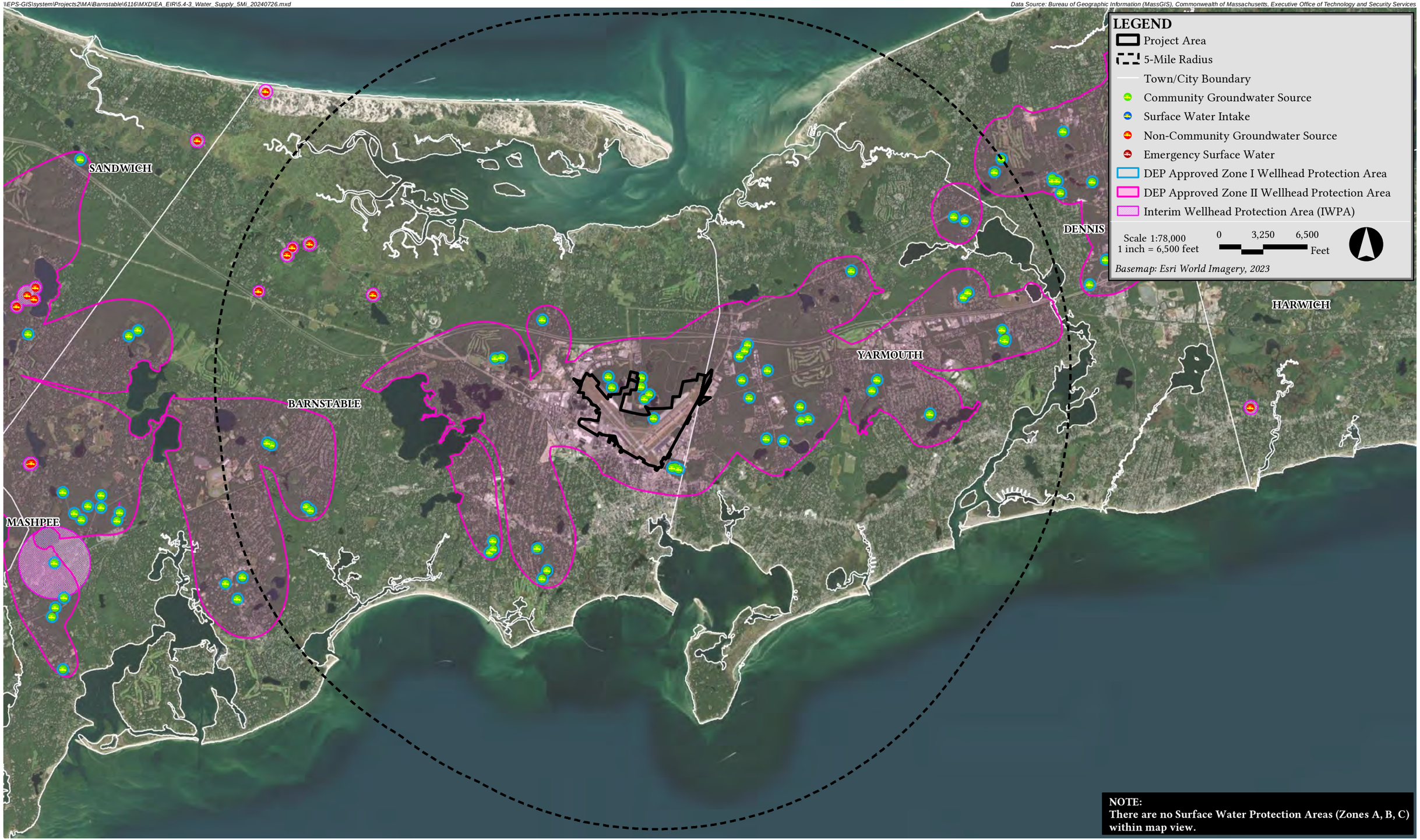


Figure 3.1-3
Protected Water Supply Areas

Groundwater elevations, measured by Horsley Witten Group (HWG) throughout the Airport, are also included on Table 3.1-1 below. Each time the monitoring wells are sampled, groundwater elevations are recorded. Based upon the groundwater elevations, the estimated hydraulic gradient is set forth below.

Table 3.1-1 2020 Groundwater Elevation Data

Start (Well ID)	End (Well ID)	Distance (Feet)	Change in Groundwater Elevation (Feet)	Hydraulic Gradient (Feet per foot)	Well Start Location	Well End Location
HW-1	HW-23	1,477	2.7	0.0018	North Ramp	North Ramp
HW-1	HW-4M	325	0.66	0.0020	North Ramp	North Ramp
HW-23	HW-L(d)	3,175	9.42	0.0029	North Ramp	ARFF/SRE Area
HW-302	OW-9(s)	1,201	6.57	0.0054	Steamship Parking Lot	Maher Well Field
HW-E	HW-I(s)	507	1.57	0.0030	Deployment Area	Deployment Area
Average Hydraulic Gradient				0.00302		

3.1.1 Hydraulic Conductivity

In 2020, to determine the hydraulic conductivity, the Airport completed a series of drawdown pump tests using a submersible pump and a transducer capable of logging the fluctuation of the water level in hundredths of a foot in 0.5-second intervals. In general, the tests were completed over a 30- minute period at a pumping rate of 0.25 to 0.33-cubic feet per minute. Details from the pump test are indicated below.

Table 3.1-2 Drawdown Pump Test Results

Well ID	Well Location	Depth to Water (Feet)	Total Well Depth (Feet)	Screen Length (Feet)	Maximum Drawdown	Pump Rate (Cubic Feet Per Minute	Calculated Hydraulic Conductivity
HW-I(s)	Deployment Area	18.410	25.09	10	18.732	0.33	117 feet per day
HW-F	Deployment Area	20.242	26.82	10	20.483	0.25	114 feet per day
OW-19(m)	Maher Well Field	26.942	76.14	10	27.417	0.33	78 feet per day
Average Hydraulic Conductivity							103 feet per day

Groundwater velocity at the Airport is estimated by the following equation:

Velocity (ft/d) = Hydraulic Conductivity (ft/d) x Hydraulic Gradient (ft/ft)

Effective Porosity

ft/d = feet per day

ft/ft = feet per foot

Based on the dominance of sand in the area in the aquifer, effective porosity is assumed to be 33 percent[1]. Therefore, based on the slope of the water table in this area, the porosity of the aquifer, and the hydraulic conductivity of the aquifer based on tests from wells HW-1(s), HW-F, and OW-19(m), the average groundwater velocity is estimated to be 0.94 feet per day or 344 feet per year.

3.2 Additional Hydrogeologic Information

In general, soil at the Airport in proximity to the Deployment Area and ARFF/SRE Area consists of fine to medium sand, with some coarse sand, gravel, and cobbles down to a depth of approximately 70 feet below ground surface. Below 70 feet, a layer consisting of gray silt and clay exists. The materials encountered during the soil borings are consistent with those described by the USGS soil survey for Barnstable Outwash Plain Deposits[2] (Oldale, 1974). Bedrock was not encountered in any of the soil borings and is expected to be located at a depth greater than 125 feet below grade.

The ponds located on Airport themselves are quite shallow and do not interact with deeper groundwater found that far below the water table. There are no surface water outflows from the ponds that would cause groundwater to migrate upward to discharge to the ponds or an outlet stream. The ponds only interact with shallow groundwater.

3.3 Groundwater Protection Measures

The Airport implements several programs that serve to protect the groundwater and sole source aquifer. The programs described below will be updated upon the completion of each project to reflect the additional potential sources of contaminants in the project areas. Future stormwater management implementation is discussed in Section 5.2. Additionally, the Airport's analytical data set includes over 200 groundwater samples collected from 2016 to 2024. These programs include:

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[1] Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, NJ, Prentice-Hall, 604 p.

[2] Oldale, Robert N., Geologic Map of the Hyannis Quadrangle, Barnstable County, Cape Cod, Massachusetts, Geologic Quadrangle 1158, U.S. Geological Survey, 1974.

- Spill Prevention, Control and Countermeasure Plan (SPCC);
- Stormwater Management Pollution Prevention Plan (Industrial); and
- Deicing and Aircraft Washing Procedures.

3.3.1 Spill Prevention, Control, and Countermeasure Plan

The Airport, in accordance with Code of Federal Regulations 40, Subpart 112 (40 CFR 112), maintains a Spill Prevention, Control, and Countermeasure Plan (SPCCP) to minimize the risk associated with bulk storage and transfer of Oil and Hazardous Materials (OHM); the SPCCP is updated as needed. These changes are tracked in the documentation by the Program Manager. A copy of the SPCC plan is attached in **Appendix D**. Additional information about location of OHM on Airport is located in **Chapter 7.0**, Solid and Hazardous Materials (specifically, Section 7.1.1) and in the SPCC plan referenced above.

3.3.2 Industrial Stormwater Pollution Prevention Plan

The Airport also maintains a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. EPA National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity. The SWPPP plan is provided in **Appendix E**. In accordance with NPDES permit classifications, Cape Cod Gateway Airport is designated as Standard Classification Code (SIC) 4581, "Airports, flying fields, and Terminal Services", Sector S "Air Transportation Facilities." The SWPPP identifies potential sources of stormwater pollutants on Airport property, minimizing or eliminating the potential for those pollutants to enter stormwater discharges from the airport. The SWPPP describes the existing stormwater drainage system, identifies potential pollutant sources and locations, and best management procedures (BMPs) and controls for the prevention of stormwater pollution, and establishes reporting and annual monitoring requirements. SWPPP provides information critical to the prevention of stormwater pollution at the Airport, and includes discussions of both tenant and Airport operations, potential pollutants associated with those activities, and potential pollutant storage facilities.

Table 3.3-1 lists the potential pollutants associated with each identified activity. The list of potential pollutants includes all materials that have been handled, stored, or disposed at the Airport property.

Table 3.3-1 List of Potential Pollutants

Industrial Activity	Associated Pollutants
Fuel Delivery and Transfer	Jet A fuel, low lead fuel, gasoline and diesel fuel
Vehicle, Aircraft, and equipment maintenance	Fuels, oils, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds
Deicing activities	Deicing fluids (glycol)
Vehicle washing	Fuels, oils and cleaning solvents
Snow removal activities	Sediments and salts

On a bi-annual basis, during the first and fourth years of Multi-Sector General Permit (MSGP) coverage, the Airport collects a stormwater sample from each outfall and conduct indicator monitoring of stormwater discharges. Monitoring periods are as follows:

- May 30, 2021- October 30, 2021
- November 1, 2021 – April 30, 2022;
- July 1, 2024 – November 30, 2024; and
- December 1, 2024 – May 30, 2025.

These samples are tested for 16 individual polycyclic aromatic hydrocarbons (PAHs) identified in **Appendix E** to 40 CFR Part 423. These analytes include the following: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene. The Airport reports the monitoring results using NET-DMR, EPA's electronic database. Additionally, an annual report is submitted to EPA providing a summary of the Airport's inspection documentation.

3.3.3 Deicing and Aircraft Washing Procedures

The Airport maintains an "Aircraft Deicing and Washing Program" which outlines the procedures for Airport tenants to follow during aircraft deicing and washing at the Airport's South Ramp deicing pad. This is provided in Appendix E of the SWPPP referenced above. The South Ramp Deicing and Washing Pad was constructed in 2015 by the Airport to provide tenants and aircraft operators with a central location to complete these activities and reduce the potential for environmental impacts. The paved apron in the South Ramp Deicing Pad drains to a single, centrally located catch basin that discharges to the Barnstable Water Pollution Control Facility (WPCF) during aircraft deicing or washing. South Ramp deicing and washing pad features an oil water separator (O/WS) and pump station with an integrated Mission pump monitoring system.

During aircraft deicing or washing (when the pump station is in operation), the Mission pump monitoring system will notify the Barnstable WPCF. During all other times, this same catch basin discharges to the Airport's stormwater conveyance system that ultimately discharges to Upper Gate Pond. The discharge system is controlled through a series of manual gate valves that are operated by Airport Operations personnel. The Airport currently requires all tenants to utilize Type I propylene glycol based deicing fluids and "green" washing fluids. Each lease also refers to the tenants' responsibilities in adhering to the Aircraft Deicing and Washing Program.

In accordance with Barnstable WPCF requirements and the Airport's SWPPP, each aircraft owner / tenant agent must maintain a record of the cumulative amount of deicing fluid used each day. The cumulative record should be stored with the deicing fluid equipment or at the

hangar office. The volume of deicing fluid used during each calendar month shall be reported to the Airport Manager's office at the end of each month, or at any time Airport Management requests this information.

The Barnstable WPCF designated Simple Green Aircraft and Precision Cleaner is the only permitted detergents to be utilized during aircraft washing.

3.4 Drinking Water Wells and Wellhead Protection Areas

3.4.1 Groundwater Monitoring

HYA implemented a mitigation project of PFAS-effected soils in 2020 by capping the soils and installing monitoring wells to monitor mitigation success. Two locations of approximately 2.25-acres total (0.39% of overall airport property) were identified and confirmed with MassDEP after extensive groundwater and soils tests. Boundaries of the site where AFFF use has occurred on the 639-acre parcel were identified and accepted by MassDEP. Installation of the impervious caps serves to protect the soils from rainwater and prevent migration of the PFAS. The caps are inspected bi-annually to verify their effectiveness. The caps have significantly reduced migration of PFAS from soil into groundwater based on the groundwater analytical data.

Groundwater treatment for PFAS is occurring at the Maher wells treatment plant via granular activated carbon (GAC) treatment systems. Groundwater samples, along with multiple other lines of evidence including groundwater flow direction, contaminant fate and transport, groundwater modeling and environmental forensics all support the fact that the Airport PFAS plume impacted the Maher Wells in 2022, after the construction of the GAC treatment system. Forensics also supports the chemical signature as being related to fluorotelomer based AFFF, which corelates to the Airports purchase records. The analytical data was processed by a Massachusetts certified laboratory and is not limited or highly caveated.

The Town of Barnstable, through the Hyannis Water System, will continue to operate the Maher Wells treatment plant and will continue to provide drinking water that meets the regulatory drinking water standards. MassDEP periodically inspects the Maher Treatment plant under the water supply/drinking water program.

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). Bi-annual reports will continue to be uploaded to MassDEP until a permanent solution can be obtained.

Groundwater monitoring by the Airport is conducted bi-annually to monitor the effect of the soil caps on the Airport's PFAS Plume. At a minimum, groundwater samples are collected from the following wells (shown in **Figure 3.1-1**) for PFAS analysis:

- HW-I(s)
- HW-I(m)
- H-I(d)
- HW-S (s)
- HW-S (m)
- HW-P(s)
- HW-P(m)
- HW-302
- HW-3
- ME-1 (untreated intake water from Maher Drinking Water Well 1)
- ME-2 (untreated intake water from Maher Drinking Water Well 2)
- ME-3 (untreated intake water from Maher Drinking Water Well 3)

Groundwater sampling occurred in December of 2023 and again in May of 2024. Overall, after the caps were installed trapping the PFAS Plume, the groundwater concentrations of PFAS went down dramatically and have stayed consistently lower than concentrations were before the caps were installed. Additional discussion is provided in Chapter 7. The public can review all reports on-line through either the MassDEP online database or the Airport's website. The most recent sampling results are provided in **Appendix C.**

3.4.2 Compliance with Zoning Overlay Districts

Per the Town of Barnstable Zoning Code, §240*-35 Groundwater Protection Overlay Districts (rev 1993),[3] there are three overlay districts which serve to "protect the public health, safety, and welfare by encouraging nonhazardous, compatible land uses within groundwater recharge areas." These are the Aquifer Protection Overlay, Groundwater Protection Overlay and Well Protection Overlay. The Aquifer Protection Overlay encompasses the entirety of the Town with the exception of the other two overlay districts. The Groundwater Protection Overlay, based on MassDEP Zone II mapping, and Well Protection Overlay, based on five-year time of travel zone to existing, proven future and potential future public supply wells, encompass different portions of the Airport and project areas. See **Figure 3.4-1.**

The proposed projects described in Chapter 1 are in full compliance with the Groundwater Protection Overlay District regulations at Section F including recharge requirements, site clearing limitations and stormwater management. With regards to the Well Protection Overlay District Regulations at Section G, the proposed projects are also in full compliance, including spill protection and prevention planning. The proposed projects will be incorporated into the SWPPP and SPCC plans referenced above in Sections 3.3.1 and 3.3.2 respectively, as they are implemented.

[3] See Town of Barnstable Zoning Code at https://ecode360.com/6559171#6559171

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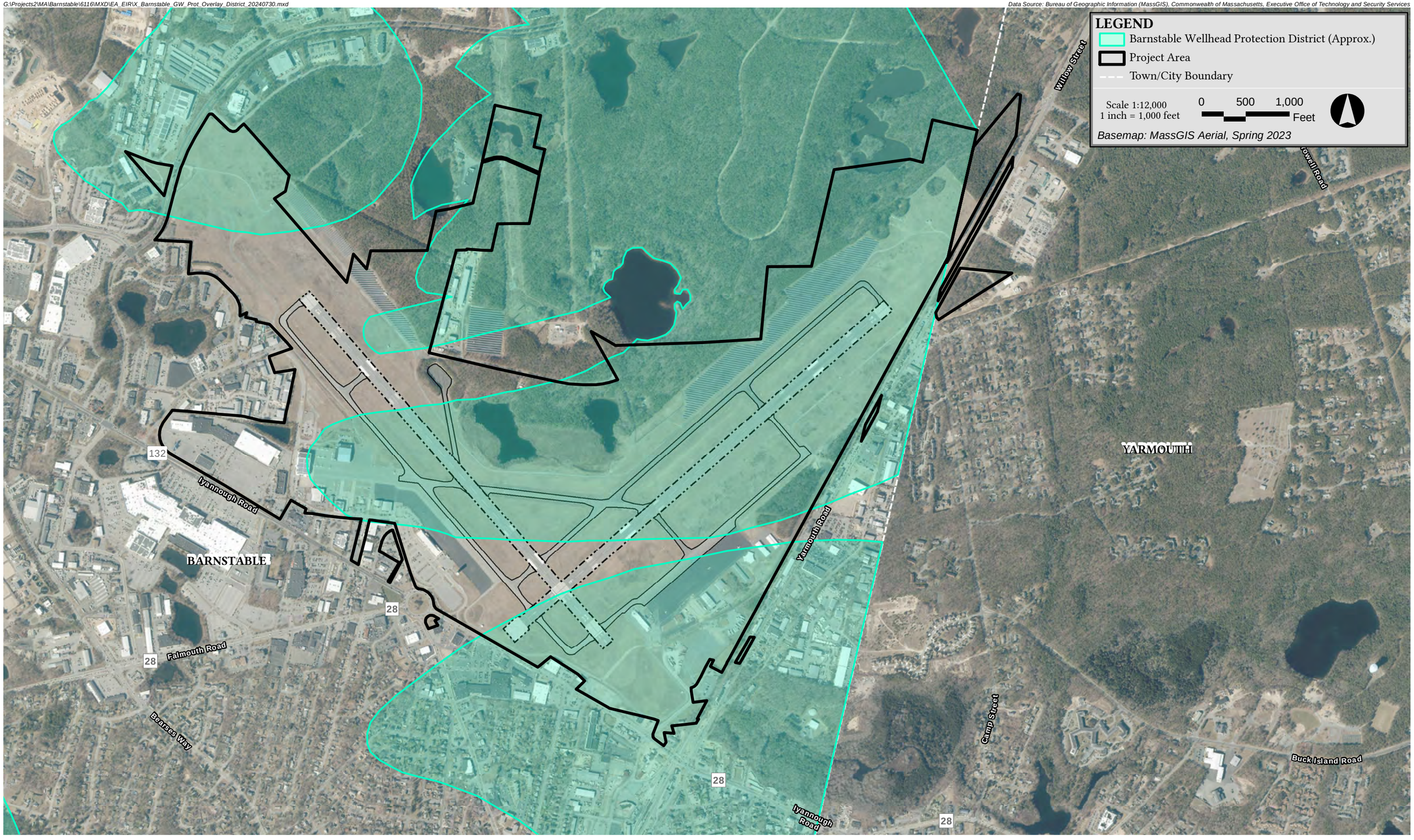
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 3.4-1
Barnstable Wellhead Protection Overlay District

3.5 Construction Period Protection Measures

3.5.1 Soils Management

PFAS impacted soil in the East Ramp deployment area and at the ARFF/SRE Building area have been capped to prevent further groundwater impacts. Within the ARFF/SRE Building Area, pavement was used to create the cap. Within the deployment area within the vicinity of the east ramp, a Geomembrane (30 mil Plastic liner), covered by topsoil and grass was utilized. Both caps prevent rain from leaching through the soil and entering groundwater. No further ground disturbances are proposed in these two areas. The airport will take all necessary precautions (e.g., marking construction limits) during all ground moving activities (e.g., grading, excavating, and fill) to ensure the capped areas of the airport remain intact during construction, and that the PFAS-contaminated soil will remain in place indefinitely. Any future construction within the estimated extent of PFAS impacted soils will be conducted under a Release Abatement Measure (RAM) as described in the Massachusetts Contingency Plan (MCP) under 310 CMR 40.0440.

With regards to other areas of the Airport, consistent with design and construction projects implemented recently at the Airport, during the design process the Airport's design engineer will undertake a sampling program to supplement the existing database of sampling efforts in the project specific areas. The program will be designed by a Licensed Site Professional (LSP) and soil samples will be taken through the project limits of disturbance. This sampling effort will guide the reuse, storage, or disposal of excess materials. To the maximum extent feasible, the design process will aim to balance the cuts and fills of site grading to minimize and avoid any off-site material movement.

3.5.2 Stormwater Management

All stormwater during construction periods will be managed on site and no stormwater will be allowed to discharge off Airport property. Groundwater and surface water will either be treated and discharged to surface water in accordance with requirements of the NPDES Remediation General Permit, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal. Please see Section 5.2.6 for additional discussion on construction period stormwater management.

Chapter 4.0

Environmental Justice & Public Health

4.0 ENVIRONMENTAL JUSTICE AND PUBLIC HEALTH

In accordance with the MEPA Public Involvement Protocol for Environmental Justice Populations (the "EJ Involvement Protocol") and the MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations (the "EJ Analysis Protocol"), this chapter of the Final EIR addresses the MEPA scope for EJ and Public Health, including an updated description of the efforts made and planned to engage potentially affected Environmental Justice (EJ) communities. Additionally, this chapter discusses Airport capacity, the potential for electric aircraft, and stormwater management.

This chapter also updates conclusions for existing health and environmental burdens including health vulnerabilities, historical or existing sources of environmental pollution, and climate risks.

4.1 Environmental Justice and Populations

Per the Massachusetts Executive Office of EEA, EJ is based on the principle that all people have a right to be protected from environmental pollution, and to live in and enjoy a clean and healthy environment. The EEA has established an EJ Policy (updated June 2021) to "help address the disproportionate share of environmental burdens experienced by lower-income people and communities of color" and "ensure their protection from environmental pollution as well as promote community involvement in planning and environmental decision-making."

MEPA has classified areas of Massachusetts as to whether they meet the criteria of an EJ Population by using the United States Census data to determine whether a block group meets one or more of the following criteria:

- The annual median household income is not more than 65% of the statewide annual median household income;
- Minority groups comprise 40% or more of the population;
- 25% or more of households lack English language proficiency;
- Minority groups comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income; or
- The Secretary has determined that a particular neighborhood should be designated as an EJ population.

Based on the updated EJ Viewer maps, the Project is located in and within one mile of communities that meet the criteria for EJ populations including minority, minority and income, and minority, income, and English isolation. **Figure 4.1-1** shows the EJ populations

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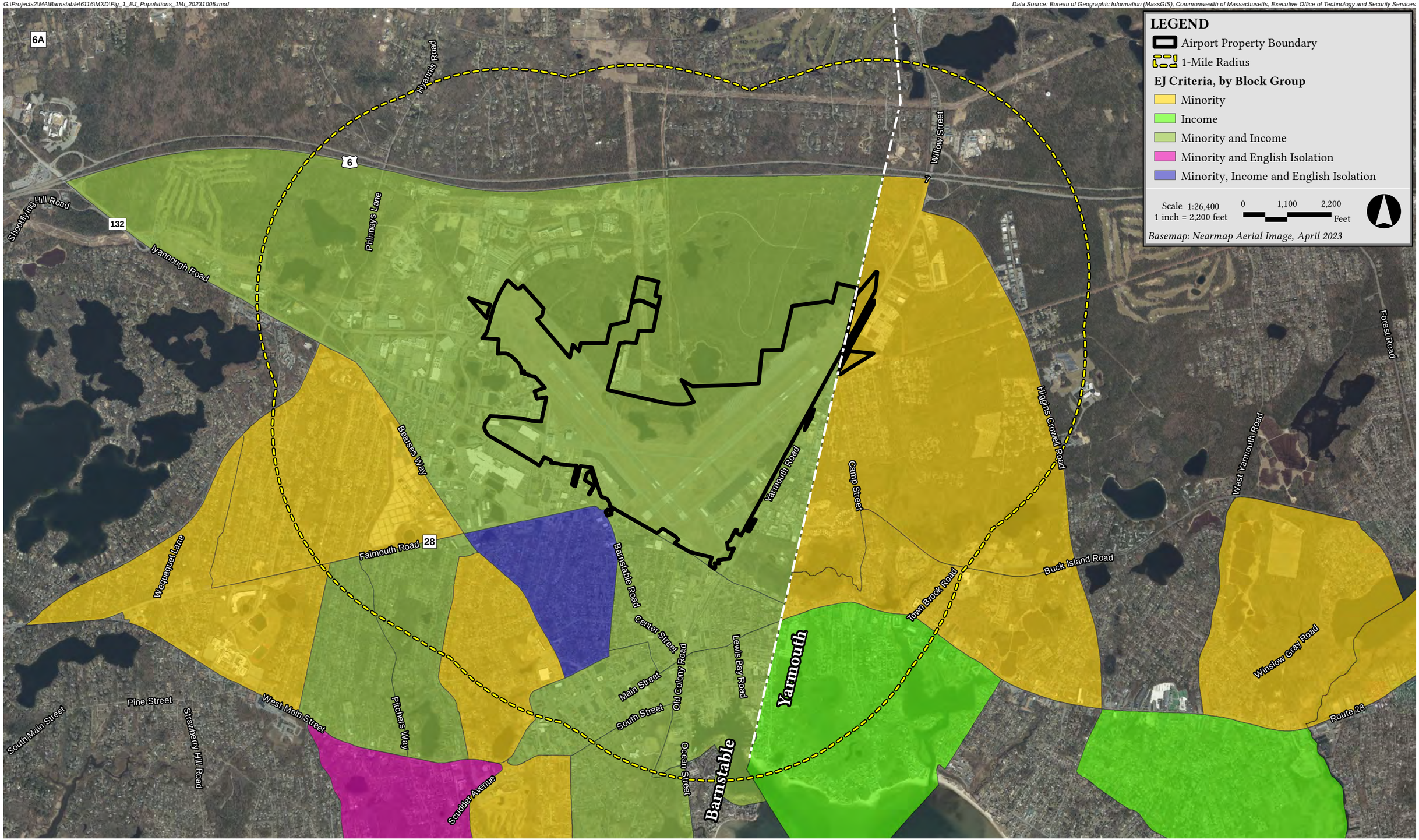
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport **Barnstable, Massachusetts**

Figure 4.1-1
Environmental Justice Block Groups, 1-Mile Radius

within a one-mile radius (denoted by a dashed yellow circle) around the Project site and establishes the Designated Geographic Area (DGA) used as the basis for analyzing potential Project impacts and for public outreach purposes.

All EJ populations within the DGA are located in Barnstable and Yarmouth. The Proponent identified three EJ block groups that intersect the DGA, summarized in **Table 4.1-1** below.

Table 4.1-1 2020 EJ Block Groups within the DGA

Census Tract	Block Group	EJ Designation	Municipality
1	153	Minority and income	Barnstable
1	126.01	Minority	Barnstable
2	126.01	Minority	Barnstable
1	126.02	Minority and income	Barnstable
4	126.02	Minority and income	Barnstable
3	126.02	Minority	Barnstable
2	126.02	Minority, income, and English isolation	Barnstable
2	125.02	Minority and income	Barnstable
2	153	Minority and income	Barnstable
3	153	Minority and income	Barnstable
4	121.02	Minority	Yarmouth
2	121.02	Minority	Yarmouth
3	121.02	Income	Yarmouth

4.2 Public Meetings and Project Information

The Proponent held the first public outreach meeting in-person public meeting at the Airport on Thursday, October 27, 2022, at 6:00 PM to notify the public of the proposed improvements at the Airport. A weekday was selected to avoid interfering with personal schedules. The date was chosen to be ahead of the ENF submission to allow for the incorporation of community input into the filing. Evening (6:00 to 8:30 PM) was selected as a meeting time to allow people to come after work. Translation services in Spanish and Portuguese were offered as well.

Prior to the ENF filing, additional efforts were made including:

- An updated EJ Reference List was obtained from the MEPA office (received from MEPA on September 26, 2023). See **Appendix I.**
- Newspaper ads, postcards, and press releases sharing a brief description of the Project as well as notifying the public of the October 27, 2022, public meeting were shared far and wide.
- The EJ Screening Form (translated to Portuguese and Spanish) was distributed on October 12, 2022. See **Appendix I.**
- A website was created to provide Project information, updates, meeting notices, and presentation materials (https://flyhya.com/airport-info/environmental-assessment/).
- A Project email was made available to allow the public to contact the Project team with any questions or comments (envirohya@epsilonassociates.com.
- A pamphlet with brief Project information and environmental timeline review was distributed during the October 27, 2022, public meeting.

A second public meeting was held for the ENF Scoping Meeting held on January 5, 2023, both virtually (at 2:00 PM) and in person (at 6:00 PM) at the Airport. This meeting was focused on the MEPA review process, a summary of the master plan projects and proposed impacts, and for those that attended in person, a site tour of the Airport was held, visiting each project area. Outreach efforts for this meeting included the following:

- Newspaper ads, emails to stakeholders, and press releases sharing a brief description of the Project as well as notifying the public of the January 5, 2023, public meeting were shared far and wide. The Airport's website was updated to include a downloadable version of all meeting notices, and translations of said notices. After the meeting, the presentation was published on the Airport's website.

A third public outreach meeting was held virtually at 2:00 PM and in-person at the Barnstable Town Hall on Thursday, June 21, 2023, at 6:00 PM to update the public on revisions made to proposed improvements at the Cape Cod Gateway Airport. The meeting also provided an opportunity to share information on additional impact analyses conducted since the filing of the ENF. Similar to past meetings, a weekday was selected to avoid interfering with personal schedules and evening hours (6:00 to 8:30 PM) selected to allow people to come after work. Translation services were also offered in Spanish and Portuguese. Efforts made to promote the meeting included:

- Newspaper ads on Barnstable Patriot and the Cape Cod Times and emails to stakeholders.
- The Airport's website was updated to include a downloadable version of all meeting notices, and translations of said notices.

- After the meeting, the presentation was published on the Airport's website.

On September 6, 2023, a FAA Noise Policy Letter was distributed to Airport stakeholders notifying them of the national opportunity to comment on FAA's nationwide Noise Policy Review Process, including evaluating use of Day-Night Average Sound Level (DNL) as the primary noise metric. The letter noted that the comment period opened on May 1, 2023, and ended on September 29, 2023.

A fourth meeting was held on December 12, 2023. The meeting was held virtually at 2:00 PM and an in-person meeting, presenting the same information, at 6 PM at Barnstable Town Hall. This meeting was also attended by staff from FAA and MassDOT Aeronautics staff to answer questions from the public. The meeting also allowed the project team to inform the public of studies conducted since the third public meeting.

A fifth and final public outreach/informational meeting was held on August 27, 2024. The meeting was held virtually at 2:00 PM and an in-person meeting, presenting the same information, at 6 PM at Barnstable Town Hall. This meeting provided the community with an update on the project analysis updates and changes to the project components included in the final EIR document.

As with all public meetings, the MEPA EJ Reference List/Distribution List along with the Airport's database of stakeholders, and interested parties, was used for email notification.

4.3 MEPA Distribution List Outreach Update

The FEIR/EA has been updated to include an updated EJ outreach effort using the latest EJ Reference/Distribution list provided by the MEPA office. The EJ Reference list is compliant with the EJ Policy updates Effective April 1, 2024, which requires projects requesting an "EJ Reference List" from the MEPA Office that contains applicable EJ organizations/individual contacts for notification/distribution purposes within a to be used to compile a project-specific "EJ Distribution List".

The following steps were taken to meet the requirements of the updated EJ distribution list Policy for the proposed Project:

- An updated EJ Reference List was requested on May 6th, 2024, and received from the MEPA Office on May 9th, 2024;
- The updated EJ Reference List contained updated contacts for Statewide EJ Organizations, Indigenous Organizations, Federal Tribes, Local Organizations, and EJ Distribution List.
- The Airport download the EJ workbook and populated the blank EJ Distribution List tab;

- The EJ Distribution List tab was populated with information about the project and the project site. The Airport also populated the project name, the project address, municipalities within the Project's DGA, the date that the project-specific EJ Distribution List was generated, and the filing type (ENF, EIR, etc.) for which the distribution list was generated.
- All contacts in the Statewide Organizations and Indigenous Organizations tabs were copied and pasted into the EJ Distribution List.
- From the Federal Tribes tab, since the Proposed Project is not located in Western, MA, all contacts in the Federal Tribes were copied except for the Stockbridge-Munsee Tribe into the EJ Distribution List.
- Appropriate contacts from the Local Organizations tab were added to the municipalities identified within or partially within the project's DGA.
- Using the *Service Area* column, within the Local Organizations tab, the Project team searched for municipalities one-at-a-time to identify community-based organization (CBO) contacts within the project's DGA.
- Contacts for each applicable municipality were copied into the EJ Distribution List.
- The Airport has supplemented the project-specific EJ Distribution List by adding contact information based on its own local research into additional CBOs, tribes, or other neighborhood leaders who may have interest in the proposed Project. These additional contacts identified through supplemental research were added to the EJ Distribution List.
- The updated EJ Distribution List was provided to the MEPA Office via a copy of the populated EJ Distribution List tab in an Excel Workbook format.

4.4 Airport Capacity

As requested by MEPA in the Final EA/EIR scope related to Environmental Justice, the following section discusses the increase in infrastructure capacity (e.g., hangar space) and its assumed relationship to future additional demand in Airport operations.[1] In its scope the MEPA office requests the following:

> *The "FEIR should clearly explain why an increase in infrastructure capacity, including hangar space, runway and taxiway extensions, and terminal expansion, should not be presumed to include additional demand for Airport operations, and should cite academic literature or other sources to support this explanation. FEIR should present revised estimates of noise, traffic, and air quality/mobile source that include certain assumed increases from No -Build to Build conditions as a result of the project components that are described as capacity expansions to support growth."*

[1] A takeoff and landing are each counted individually as one operation.

The Airport is not seeking an "expansion in capacity" to accommodate aircraft it believes will come if the projects are built – rather, the Airport's stated goal presented in the Purpose and Need, is to address the needs of existing Airport users by building the Airport infrastructure needed to safely and efficiently accommodate their use.

The term "improvements that support future Airport growth," as used in the DEIR/EA and the FEIR/EA, relate to the facility and infrastructure improvements identified in the Master Plan which are necessary for all operators and types of activity not just air carrier activity. As noted in the Master Plan operations forecast by aircraft type (Table 4.4-1), within the Based GA category, an increase in almost +3,000 annual operations is forecasted over AMPU horizon (2024-2040), regardless of the infrastructure improvements described herein. Within the more immediate period of 2025 to 2030, +647 annual operations are anticipated in the AMPU forecast, again, with or without the infrastructure improvements proposed herein.

Table 4.4-1 Annual Operations Forecast by Type

Year	Air Carrier		Air Taxi	Itinerant GA	Military	Total	GA	Local Military	Total	Total Ops
Baseline	183		35,595	22,340	95	58,213	9,009	128	9,137	67,350
2025	197		32,360	24,639	95	57,291	9,800	128	9,928	67,219
2030	219		31,401	26,514	95	58,229	10,447	128	10.575	68,804
2040	270		29,567	30,567	95	60,888	11,985	128	12,113	73,001

Sources: Cape Cod Gateway Airport Management, 2019; McFarland Johnson, 2019.

While the proposed Projects provide safety enhancements and infrastructure upgrades to the Airport to meet the expected future needs, the overall context is that total operations in 2040 (73,001) are much lower than historic (2008 to 2017), and therefore is not anticipated to result in, or require, "an expansion" in operational capacity. Operations and the demand for certain Airport facilities (e.g., hangars) may diverge – that is the operations, existing and forecasted, and the infrastructure of the Airport does not necessarily have a positive correlation to each other (that is moving in the same direction along two variables).

4.4.1 Hangars

Hangar development may occur at any time depending on interested leasing parties. These projects are described in Section 3.1.5 (Draft EA/EIR). The forecast for hangars includes changes in operations based on based aircraft (i.e., "Local") that would be housed in hangars. Table **2.1-1** in Chapter 2 of this document details the existing and future hangar needs.

"Expansion in capacity" would refer to the capacity of the Airport to "house" aircraft on site, whether in hangars or tie down spaces. **Table 4.4-2** below shows the based aircraft forecast. The forecast shows that based single engine aircraft are predicted to decline, along with a slight increase from 16 to 17 for Mult-Engine aircraft, and an additional Jet aircraft in the period of 2020-2040.

Table 4.4-2 HYA Based Aircraft Master Plan Forecast

Year	Single Engine	Multi Engine	Jet	Total
Baseline	31	16	1	48
2020	29	17	1	47
2030	27	17	1	45
2040	25	17	2	44

Sources: Cape Cod Gateway Airport Management, 2019; McFarland Johnson, 2019.

There is not a defined number of hangars proposed. **Figure 2.2-7** of the DEIR shows a potential configuration depending upon interested leasing parties. The size and quantity of hangars depends entirely upon the party leasing the space and constructing the hangar.

Please refer to Appendix B of the Draft EA/EIR which includes Chapters 4-6 of the Master Plan, Chapter 5, Section 5.5.1 for the detailed analysis of hangar demand for the Airport.

The hangars areas proposed within the North Ramp and East Ramp areas of the Airport are not a "per se" contributor to overall increased Airport operations. For example, a current based aircraft using tiedown spaces at the Airport may utilize a hangar in the future, and in this scenario, the Airport would not see a "new" aircraft operating at the Airport – instead, it is the same aircraft with a different storage location at the same Airport. Additionally, if a newly based aircraft at the Airport utilizes a hangar, it may be such that the aircraft would have decided to be based at the Airport regardless of if the hangar space was available. In both of these scenarios, the additional hangar space would not result in additional activity (operations) at the Airport.

4.4.2 Runway 15-33

The Runway 15-33 extension is being proposed to support both the current and future size of aircraft using the runway. In particular, as noted the Section 2.1 (Draft EA/EIR), the design aircraft for existing and future use remains the Gulfstream V/G500 **(this is an existing aircraft)** which is noted in Table 2.2-4 of having a longer recommended runway length than the E190 (existing) or the A220 (proposed) commercial aircraft. The projects proposed are not to provide infrastructure to support the use of larger families of aircraft.

The analysis in the Master Plan examines the future fleet mix of aircraft. Since Jet Blue has committed to the retirement of the E190 and the shift to the A220, that was identified as one of the future critical design aircraft. The A220 has increased passenger capacity versus the E190 but does not require a longer runway than the other critical design aircraft. By size comparison, the A220 is actually shorter than the E190 in length but slightly larger in other dimensions. Please see Section 1.2.1.4 for prior discussion on runway length analysis. Attached in **Appendix F** is the letter from JetBlue confirming the fleet change to the A220.

Consistent with the above information, relative to the project's role is addressing Airport efficiency and capacity, the environmental consequences associated with the Preferred Alternatives have already taken into account future estimates of aircraft operations (via the Master Plan estimates). As a result, the conclusions presented in the Draft EA/EIR and the Final EIR have considered the extent of operation increases for the proposed projects. Sections 4.6 and 4.7 below update conclusions relative to Stormwater and Air and Noise Emissions for impacts within surrounding EJ populations.

4.4.3 Future Estimates associated with Project Components and Phase Two Projects

FAA has requested that the Airport move two projects (the Airport terminal building enhancement/expansion and EMAS) to a future phase (i.e., "Phase 2") of the environmental review under NEPA/MEPA, due to the estimated development timeframe of greater than five years. These projects are still considered within the current documentation as a "future project" per NEPA guidelines and are discussed in 6.15.2 of the Draft EA/EIR.

As this is generally consistent with NEPA/MEPA guidelines, these projects were shifted to discussion as future impacts. Additionally, there is not any design information available to support any meaningful GHG analysis for the terminal improvements as information such as HVAC design, footprint size, etc. is not available to support any type of modeling. Commitment to the meet state building stretch codes is consistent with the Airport's carbon footprint reduction goals that they have been implementing for the past several years.

Otherwise, potential impacts from Phase 2 are generally outlined in the Draft EA/EIR and Final EIR with respect to land alteration, impervious area, wetlands, and MCP/PFAS. Future noise reflects full build of the runway extension in the future 2040 condition. As previously noted, the model (AEDT) used for this analysis is what is required by FAA for a Part 150 study. The analysis conducted relative to noise was also very conservative in the types of aircraft used in the future conditions. For example, the loudest of the helicopters in the current fleet was used in the model for helicopter operations, not the actual fleet mix which operates on a daily basis which has quieter noise signatures.

Traffic was based on the two identified forecasts of passenger trip increases (50% and 100% growth scenarios). Traffic impacts assess air pollutants from combustion of fuels of all kinds (namely PM and NOx), including those from aircraft.

The transportation analysis evaluated passenger increases consistent with the operations forecasting.

4.5 Electrification of Aircraft and Associated EJ Benefits

Electric aircraft, while still a developing technology, have numerous potential benefits, including noise and emissions reductions. According to a 2021 Report from the National Renewable Energy Lab, *Electrification of Aircraft: Challenges, Barriers, and Potential Impacts*[2], "electric aircraft have the potential to reduce the noise because of both the electric motor and steep climb/descent profiles of electric aircraft…studies indicate that commercial hybrid-electric and electric propulsion could reduce aircraft noise up to 85% (electric), improve fuel consumption by 40% (hybrid), reduce CO2 emissions by more than 20% (hybrid), and reduce airline operating and maintenance costs up to 20% (electric and hybrid) (NREL, 2021).

The NREL study further notes that "Airports need to begin considering the electrical needs and long-term power demand required to meet the needs of future all-electric aircraft. Near-term efforts need to consider both electric aircraft and growing electrification of other airside and landside vehicles.

The Airport is committed to support electric aircraft as evidenced through its investment in planning a smart grid/renewable energy project (the "microgrid"). The electrification of aircraft will be enabled by the Airport's microgrid project currently in planning stages and funded via a $1.95 million grant award from the U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) Program.

Environmental justice issues are a key driver in the area of electric aircraft – given the benefits of reductions in noise and emissions. Accordingly, environmental justice concerns are triggered by human health or environmental effects, including interrelated social and economic effects. Around Airports, noise and air quality are the most frequent concerns relative to environmental issues.

The future microgrid –the existing onsite green energy generation options combined with the addition of new sustainable sources of energy –will be designed to green the Airport's infrastructure to accommodate the electrification of its operations. From the future microgrid, the Airport will achieve environmental benefits and promote overall human health benefits. The following sources of new electrical loads at the Airport will be:

- Electrified small aircraft (replacing Cessna 402s and similar sized aircraft;
- Electrified rental car fleets and Airport operation fleets;
- Increased flight traffic from transient electric aircraft; and

[2] https://www.nrel.gov/docs/fy22osti/80220.pdf

- Charging of local RTA fleet vehicles and charging stations for local/nearby residents and visitors.

The changes within the aviation sector to introduce electric aircraft will result in additional electrical capacity, as well as high-speed charging stations around the Airport. Estimates of the Airport's projected electrical use is provided in Table 4.5-1(ARUP, 2024).

Table 4.5-1 Airport Electrical Use- Existing Conditions and Project Baseline

Year	kW	kWh
2025	296	1,192,904
2026	488	1,362,904
2027	680	1,532,904
2028	872	1,702,904
2029	2,011	2,089,680
2030	2,493	2,644,904
2031	2,835	3,115,904
2032	3,177	3,586,904
2033	3,519	4,057,904
2034	3,861	4,528,904

The carbon emissions from the Airport include both the electricity used and the aircraft fuel consumed. Each component has a different amount of carbon per unit, used to establish a baseline for the Airport's carbon footprint, as shown in Table 4.5.2 – Airport Baseline Carbon footprint.

The design of the microgrid will include the consideration of the addition of solar photovoltaic panels, increasing the Airport's access to revenue from renewable power and the environmental benefits from using this green energy source. Energy storage in the microgrid will also allow for better utilization of these renewable power sources and allow the Airport to meet their growing demand. (ARUP, 2024).

Table 4.5.2 Airport Baseline – Carbon footprint

Source	Carbon / Unit	Total Carbon
Electricity purchased	574 lbs/MWh	688,800 lbs
Aircraft fuel consumed	24.56 lbs/gallon	4,470,000 lbs

The anticipated results from the microgrid planning phase (i.e., Phase 1) will be the basis for the Airport's application for a larger SMART grant of $15 million to design the details of the microgrid (i.e., Phase 2). The planning will also entail economic considerations with the selected engineering firm modeling various scenarios and technologies to determine potential microgrid cases with the funding. Construction and implementation of the microgrid is entirely dependent upon being selected for the second phase of grant funding.

The current planning phase (as of 2024) would result in the selection of a smart microgrid configuration (option of technologies) that will be included in a separate funding phase (permitting and design) which will seek to gain the above noted economic benefits while also taking into account the reliability, sustainability, resiliency of the system – and the larger benefits to the community beyond, especially in and around EJ communities.

4.6 Stormwater Management

4.6.1 Precipitation Projections for Stormwater Management

The projects will be designed to meet the updated stormwater management standards that MassDEP is proposing (as of late 2024), as part of the update to the Wetlands Protection Act. New stormwater regulations pertaining to precipitation intensity and frequency by, at a minimum, will adopt the NOAA Atlas 14-Precipitation-Frequency Atlas of the United States Volume 10 Version 3.0: Northeastern States.

Using these new higher storm designs will allow the Airport to address related stormwater management issues of the proposed projects and to respond to broader climate resilience implications by incorporating the most recent storm data. As necessary, the Airport will consider options for possible future climate related increases to precipitation projections, such as adding stormwater management reserve areas, that can be utilized to account for future conditions.

4.6.2 Updated Stormwater Standards for Flood Protection and Water Quality Improvements

As noted above, the Project has committed to meeting the updated measures within DEP's proposed regulations relating to stormwater design standards. These measures will help address any potential for impacts to EJ communities surrounding the Airport by improving resiliency against increasing flooding, storm damage, and runoff pollution.

Recent climate findings have noted that storms have been increasing in intensity with climate change, and as a result, today's "100-year storm" delivers more water than the 100-year storm of the 1960s. Current stormwater regulations use older data to design stormwater systems, and as a result, use pipes that are not large enough to carry the water. Furthermore, stormwater that is not captured can cause flooding, scouring of riverbanks, damage to buildings and bridges, and other problems.

The Project, by using up-to-date precipitation data to design stormwater systems, will help to prevent stormwater causing damage to off-Airport property. Other benefits of the proposed stormwater systems include the following:

- Ensures resilience of wetlands resources and stormwater systems by incorporating design to handle extreme precipitation events. The system will handle precipitation amounts reaching 90% of the upper end of the range of historical precipitation, aka "NOAA 14 PLUS", and is proposed to ensure that stormwater from most (80%) storms will be adequately managed.
- Reduces flooding, pollution, and replenishes groundwater and streamflow by utilizing stormwater system design to move more stormwater into the ground. This measure will only be proposed within appropriate areas of the Airport, consistent with current efforts to contain and clean up PFAS, specifically the East Ramp PFAS containment area.

The proposed stormwater systems will use natural and ecological processes to handle stormwater runoff and to prevent flooding and polluting nearby waters. This will include increasing use of bioretention areas, and addition of tree canopy (within compatible areas of the Airport, e.g., parking lots). Please see Section 5.3 for further discussion of stormwater management and compliance with stormwater standards.

Use of these natural components within proposed stormwater systems will reduce/replace the amount of pavement and pipes and other hard infrastructure necessary within the Airport property. As a result, given the Airport's commitment to use stormwater management design for higher storm totals, and use of natural and ecological processes (e.g., LID), it is not anticipated that the proposed project will exacerbate or contribute to any existing or future potential SW or flooding impacts within EJ communities.

4.7 EJ Community Impact Categories

4.7.1 Noise and Air Emissions

As further discussed in the Final EIR Chapter 6 - Climate Change, the Airport and its commercial operator are undertaking several measures to reduce air emissions. In summary, the Airport will seek additional tree replanting efforts and will reuse harvested wood materials onsite, to the greatest extent possible, to offset losses in carbon sequestration and carbon release from proposed tree cutting and vegetation removal within Airport property. While tree replanting and reuse of wood materials would assist the reduction in loss of carbon sequestration and aircraft emissions, the Airport is also fully supportive of the local "Greening Hyannis"[3] initiative that will organize the planting new carbon sequestering trees within

[3] See https://greeninghyannis.com/.

Hyannis and in EJ communities. The initiative is funded by a grant awarded for tree plantings from the Greening the Gateway Cities Grant Program. The Airport will coordinate with the Staff from Greening Hyannis to assist with locations for tree replanting and/or supplemental funding for trees to be planted within certain EJ areas and around the Airport. By supporting this program, the Airport will improve air quality conditions within EJ communities.

The transition to the Airbus 220 from the Embraer 190 commercial jet by JetBlue results in a 25% reduction in air emissions and 20 % reduction in fuel usage. Furthermore, the A220 engines are capable of burning a 50% blend of Sustainable Aviation Fuel (SAF) and by 2030, will be able to use 100% SAF.[4]

4.7.1.1 Air Monitoring

Over the past few years small low-cost air quality sensors have become available and are being used by citizens, researchers, and states to expand local air quality monitoring. One source is the AirNow Fire and Smoke Map[5], which shows publicly available crowdsourced particulate matter data, together with data from regulatory $PM_{2.5}$ monitors operated by state/local governments.

$PM_{2.5}$ is a mixture of solid particles and liquid droplets found in the air and made up of hundreds of different chemicals. $PM_{2.5}$ is so small that it can be inhaled into the lungs and may contribute to health effects. $PM_{2.5}$ sensors can be used to understand local air quality and identify areas with potentially higher pollution levels where mitigation efforts can be directed to protect residents' health.

In 2021, MassDEP began providing $PM_{2.5}$ sensors to communities to monitor local air quality. This MassDEP grant program provides up to ten $PM_{2.5}$ sensors to place at outdoor locations in cooperation with residents, schools, businesses, and community organizations. The data from these sensors can be seen on the map in the following link: https://www.mass.gov/info-details/air-sensors-for-particulates. The closest sensors to the Airport are located in East Sandwich and Chatham.

The Airport will coordinate with the Town of Barnstable relative to seeking a grant from MassDEP to fund the purchase of $PM_{2.5}$ sensors to use for monitoring of air quality in the areas surrounding the Airport.

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4 Nantucket Current | New 140-Seat JetBlue Aircraft Makes First...

5 https://fire.airnow.gov

4.7.1.2 Noise Monitoring

FAA employs and requires the use of the AEDT[6] model software to generate detailed noise results over large areas, as noise modeling is the only practical way to accurately and reliably determine geospatial noise effects in the surrounding community when analyzing aviation noise.

According to FAA[7], there are many challenges and limitations to using noise measurements (i.e., monitoring) for evaluating Airport vicinity noise. The following challenges are noted by FAA on the use of noise monitoring:

- Non-aircraft sound can have a large influence on noise monitoring data, which can be difficult to separate from aircraft noise during data post-processing.
- Long-term noise monitoring requires regular maintenance and calibration of the individual noise monitors on a continuous, year-round basis, which has considerable costs.
- To ensure the same accuracy and fidelity of data generated by noise models, a substantial number of noise monitoring locations is required. (e.g., tens of thousands of noise monitors, collecting year-round data in the vicinity of an Airport would be needed to match the fidelity and accuracy of noise modeling).

Given the requirements to use AEDT, and the considerable drawbacks to using noise monitoring to measure aircraft noise, the Project is not proposing this as a monitoring measure to be included in the Project.

4.7.2 Public Health - Groundwater / Sole Source Aquifer

An updated groundwater analysis is presented in the Final EIR to fully address the comments from EPA's Sole Source Aquifer program. Please see Chapter 3 for a discussion on the groundwater resources and project related impacts and mitigation measures. As it relates to Public Health, please refer to Section 3.4 for information on the project related measures proposed to reduce the potential for release of contaminants with additional discussion in Chapter 6. Also, as noted previously, the Airport has conducted comprehensive efforts to address PFAS within the Airport property, please see the Airport's PFAS website for information on sampling, monitoring, remediation and cleanup activities: https://flyhya.com/Airport-info/pfas/.

Additionally, the Airport continues to coordinate with MassDEP and the Town of Barnstable as they complete ongoing investigations into the impacts of PFAS on soil and groundwater. The purpose of Airport PFAS related efforts is to continue reporting, testing, mitigation, and

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6 https://aedt.faa.gov/

7 https://www.faa.gov/faq/why-does-faa-use-noise-modeling-vs-noise-monitoring

monitoring as necessary to meet MassDEP Bureau of Waste Site Cleanup reporting requirements. Multiple reports are required to meet MCP requirements and can be found here: https://flyhya.com/Airport-info/pfas/. Per the Airport's most recent DEP submittal, Immediate Response Action (IRA) Status Report 14, IRA Completion Statement, Phase IV Final Report and Completion Statement, and Phase V Status Report, the Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEP's website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater (depicted in **Figure 3.1-1**).

The Airport is not responsible for controlling non-Airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility.

Groundwater treatment for PFAS is occurring at the Maher wells treatment plant. The Town of Barnstable, through the Hyannis Water System will continue to operate the Maher Wells treatment plant and will continue to provide drinking water that meets the regulatory drinking water standards. The Airport's PFAS plume reached Maher Wells after the construction of the new treatment was completed in 2020 and as such, no exposure to the community is believed to have occurred (Horsley Witten, 2024).

The MassDEP periodically inspects the Maher Treatment plant under the water supply/drinking water program.

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). The PFAS soil caps are inspected bi-annually to verify their effectiveness. The caps have significantly reduced migration of PFAS from soil into groundwater based on the groundwater analytical data.

Chapter 5.0

Wetlands & Stormwater

5.0 WETLANDS AND STORMWATER

As specified in the Secretary's Certificate and MassDEP's comment letter on the Draft EA/EIR, this section provides an update on the following topics:

- Wetland impact summary associated with the updated Preferred Alternative for Taxiway D realignment and identifies avoidance and minimization measures relative to proposed impacts;
- Identified location of any proposed wetland replication area and conceptual design;
- Appropriate mitigation measures to demonstrate consistency with the WQC regulations;
- Stormwater management system design including accommodation of larger storm events including using the rainfall volumes that are provided by the MA Resilience Design Tool as indicative of future climate conditions and describe how the project will consider future conditions in design.

5.1 Wetlands

5.1.1 Wetland Resource Area Impacts for Taxiway D

The environmental consequences of the Preferred Alternative include unavoidable wetland resource area impacts associated with the permanent fill from the relocation of Taxiway D and associated grading on Upper Gate Pond. **No other projects will impact wetland resource areas.**

As described in the additional alternatives evaluated in Chapter 2.0 for Taxiway D, due to FAA design requirements for airport geometry, this Project activity cannot be designed to fully avoid impacts to Bordering Vegetated Wetlands (BVW). However, the Airport looked at additional alternatives which would reduce impacts while still meeting FAA design requirements. A new alternative, Alternative 5, was evaluated which would reduce impacts by removing the perimeter access road adjoining Taxiway D for a limited portion of the site. **This would result in a 35% reduction of permanent fill of BVW from the Preferred Alternative 2B presented in the Draft EA/EIR, from 4,600 sf to 3,000 sf.**

Land Under Water (LUW) impacts would be reduced from 13,200 sf to 12,700 sf, and permanent impacts to Inland Bank will be reduced to 300 linear feet (LF) as a result of the realignment of Taxiway D. These impacts have been avoided and minimized to the maximum extent practicable through utilization of 2:1 side slope design with an engineered slope option. In addition to the proposed permanent impacts to BVW, temporary impacts of 405 sf of BVW/810 sf of LUW generally involve a 5-foot horizontal area necessary for construction access and work associated with the Taxiway D. The proposed construction would temporarily alter these areas by a variety of construction activities including temporary excavation and backfilling, support of excavation and water control, staging and operating construction

equipment, grading, and installing erosion controls. Once construction is complete, the resource areas not permanently impacted by filling would be restored to pre-existing grades and seeded with a native wetland seed mix.

Table 5.1-1 New Preferred Alternative for Taxiway D Reduced Impacts

Alternative 5	Reduced Impacts	Engineering Design
• New Alternative • Remove Perimeter Access Road adjoining Taxiway D for a limited portion of the site	• 35% Reduction of Permanent Fill of 1,600 sq ft of BVW with the resultant fill being 3,000 sq ft instead of 4,600 sq ft. • LUW impacts reduced from 13,200 sq ft to 12,700 sq ft	• Use of a 2:1 slope design • Engineered Slope Option

Table 5.1-2 New Preferred Alternative for Taxiway D Alternative 5's Temporary Impacts

Alternative 5	Temporary Impacts	Construction Activity Causing Temporary Impacts
• New Alternative • Remove Perimeter Access Road adjoining Taxiway D for a limited portion of the site	• 405 sf of BVW/810 sf of LUW • 5-foot horizontal area necessary from toe of slope for construction access • Resource areas (that are not permanently impacted) will be restored to pre-existing grades and seeded with native wetland seed mix	• Temporary Excavation and Backfilling • Support tools of excavation and water controls • Staging and operation equipment • Grading • Installation of erosion controls

Although final design and means and methods of construction have not yet been determined, there is also the potential for excavation (dredge) of unconsolidated organic materials (i.e., "muck") along the pond bottom in order to provide suitable base material for the taxiway slope. Release Tracking Number (RTN) 4-28577 was identified in the proposed Taxiway D improvement area. RTN 4-28577 is associated with the presence of Polycyclic Aromatic Hydrocarbons (PAHs) and lead in soil and sediments above the MassDEP Sediment Screening Criteria at Upper Gate Pond. Pending the project sequencing, the work will be performed under the Permanent Solution Statement (PSS) (**Appendix G** dated November 2023) provisions of the Massachusetts Contingency Plan (MCP), as applicable. It is important to note that per the PSS, an Imminent Hazard evaluation per 310 CMR 40.0950 found that an imminent hazard to Human Health or the environment does not exist based on the levels of PAHs and lead detected in the sediment.

Since the proposed work is being performed within a portion of this MCP regulated site, soil, sediment, groundwater, and surface water will be managed in accordance with requirements of the MCP. The in-water work areas will be isolated via steel sheet pile coffer dams and bottom anchored turbidity curtains prior to the commencement of any in-water work, including the dredging. Groundwater and surface water will either be treated and discharged to surface water in accordance with requirements of the NPDES Remediation General Permit, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal.

Table 5.1-3 Proposed Work Effect on Immediate Environment and Methods of Management

Element Affected by Proposed Work	Method of Management
Soils/Sediment	Steel sheet pile coffer dams and bottom anchored turbidity curtains
Groundwater/Surface Water	Either treated and discharged to surface water, recharged, or collected and transported offsite

5.1.2 Proposed Wetland Mitigation Site

Mitigation for the Preferred Alternative's unavoidable impacts to BVW will be provided in accordance with local and state wetlands regulations and performance standards. For permanent impacts resulting from filling BVW, the altered BVW would be replaced (replicated) in-kind proximate to the water body or reach of the waterway area lost to meet mitigation requirements under the Barnstable Wetlands Protection Bylaw, Cape Cod Commission Water Resources Policy, Massachusetts Wetlands Protection Act (WPA) see 310 CMR 10.55(4)(b))., and MassDEP Water Quality Certificate regulations (see 314 CMR 9.06). The proposed ratio of replacement area to BVW loss is at least 1:1, and a total of 3,000 sf of BVW replication would be provided on Airport property proximate to the impact location(s). The wetland replication area will be designed and constructed as per MassDEP's *Massachusetts Inland Wetland Replication Guidelines, Second Edition* (September 2022).

The proposed wetland mitigation site is located along the eastern bank of Upper Gate Pond as shown in **Figure 5.1-1**. This area is one of the shallower sloped banks to the pond and enables the construction of a wetland mitigation site that is both accessible and requires less disturbance to pond bank than other areas around the edge of the pond with very steep banks. The proposed mitigation site is vegetated with herbaceous plants and woody shrubs. It is within the maintained Runway Visibility Zone (RVZ) which requires vegetation to be maintained at a height of five (5) feet or less above the runway centerline per FAA AC 150-5300-13A Section 207.

G:\Projects2\MA\Barnstable\6116\MXD\EA_EIR\X_Wetland_Replication_Area_20240806.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

LEGEND

- Airport Property Boundary Proposed
- Wetland Replication Area Land Under
- Water (LUW) Bordering Vegetated
- Wetland (BVW) 10-ft Contour
- 2-ft Contour
- New Pavement
- Pavement to be Removed
- Pavement to be Reconstructed
- Pavement Removal Turf Limits of
- Grading (2:1 Slope)

Scale 1:1,200
1 inch = 100 feet

0 40 80 Feet

Basemap: Nearmap Aerial, April 2023

Proposed Wetland Replication Area

BVW Impact Area

Upper Gate Pond

BVW/LUW Impact Areas

Taxiway D

Taxiway D

OVERVIEW

Pond
Lamson Pond
Flintrock Pond
Mary Dunn Pond
Barnstable Municipal Airport - Boardman/Polando Field
Mill Creek
Mill Pond
BREEDS HILL RD
AIRPORT WAY
YARMOUTH RD
28

Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 5.1-1
Proposed Wetland Replication Area

Existing vegetation consists of sweet pepperbush (*Clethra alnifolia*), honeysuckle (*Lonicera sp.*), black cherry (*Prunus serotina*), scrub oak (*Quercus ilicifolia*), white oak (*Quercus alba),* bracken fern (*Pteridium aquilinum*), teaberry (*Gaultheria procumbens*), poison ivy (*Toxicodendron radicans*), Oriental bittersweet (*Celastrus orbiculatus*) and catbriar (*Smilax glauca*). The BVW within the existing wetland adjacent to the proposed mitigation area consists of gray willow (*Salix cenera*), maleberry (*Lyonia lingustrina*), arrowwood (*Viburnum dentatum*), boneset (*Eupatorium perfoliatum*), marsh fern (*Thelypteris palustris*), sensitive fern (*Onoclea sensibilis*), soft rush (*Juncus effusus*), and rough-stemmed goldenrod (*Solidago rugosa*).

5.1.2.1 Review of Hydrology at Preferred Mitigation Site

Converting an upland habitat to a wetland habitat requires a steady and reliable groundwater source and/or establishment of a hydrological connection to a surface water source. The source needs to be of sufficient volume and duration to inundate or saturate soils to the surface for a sufficiently long period during the growing season to sustain hydric, or wetland conditions, and support a wetland plant community. In the case of the preferred mitigation site, by sharing the hydrology with Upper Gate Pond, and by approximating the elevations to the adjacent wetlands, the replacement area should have sufficient hydrology to support the desired wetland plant communities. The primary hydrologic input in the wetland replication area will be derived from a combination of groundwater, surface water, and precipitation.

Existing groundwater data from the nearby monitoring well (HW-404) along with soil test pit observations, described below, will be used to advance the wetland replacement area design. That design will be evaluated during the permit application review processes. To supplement the groundwater monitoring data, test pits were completed within the preferred mitigation area to examine soils to understand ground water elevations based on field indicators. On June 4, 2024, a professional wetland scientist (PWS) conducted a series of test pits in select locations throughout the limits of the preferred wetland mitigation site. The purpose of these preliminary test pits was to gain an understanding of subsurface hydrologic conditions and redoximorphic features in the soil profile and correlate those conditions to the existing known groundwater information. Highest groundwater levels and water table fluctuations are routinely estimated by soil scientists based on a soil's morphology, mainly the soil color. The depth and duration of a water table can generally be correlated to the location and abundance of redoximorphic features in the soil profile. With this in mind, hand dug test pits were conducted within the proposed mitigation site using a dutch auger.

The 3,000-sf wetland creation area located along the eastern limit of Upper Gate Pond will be monitored for two years following construction per anticipated permit requirements. A summary of invasive species monitoring information for this discrete area will be available as part of the post-construction Wetland Creation monitoring reports submitted annually for a period of two years by the Airport to the local Conservation Commissions and MassDEP. It will also include a discussion of any measures taken to control invasive species. The report will

include a quantitative assessment of the Mitigation Site (if practicable), a qualitative assessment of the Mitigation Site, a discussion of measures taken to control invasive species (if found), an estimate of control success, and recommendations for future actions. The report will also include photo documentation of each site and maps locating the approximate limits of documented invasive species (if found). Each subsequent monitoring event will include a comparison of the data to the baseline condition.

5.1.2.2 Proposed Plantings

Emergent marsh and scrub shrub vegetation cover types are proposed for the replication area. The plantings will primarily consist of a native wetland seed mix with a variety of shrub plantings, including maleberry (*Lyonia Ligustrina)*, fetterbush (*Lyonia Lucida*), highbush blueberry (*Vaccinium Corymbosum*), arrowwood *(Vibrunum Dentatum)* and pussy willow (*Salix Caprea*) similar to the impact areas. Shrubs will be planted in random locations and densities throughout the replication area to blend with the vegetation composition of the surrounding existing wetland and to mimic conditions at the impact sites. Plantings will be located at the direction of the supervising wetland scientist to simulate natural growth patterns. Shrubs will be a minimum of three to four feet in height. The plant material will either be bare-root or container grown and only plant materials native to the region will be used. The replication area will be sown with a wetland seed mix and covered with a light mulch of weed free straw if planted during summer months. The woody plants will be surrounded with an approximately 3-foot diameter ring of woody mulch to a depth of approximately 2-inches or biodegradable plastic or fiber (which will be stapled or staked to the ground) to reduce the threat of competition from herbaceous species during the first growing season.

Table 5.1-4 Proposed Plantings for Wetland Replication Area

Native Wetland Seed Mix with Shrub Plantings Listed Below	Characteristics of Plantings
• Maleberry (Lyonia Ligustrina); • Fetterbush (*Lyonia Lucida*); • Highbush blueberry (*Vaccinium Corymbosum*); • Arrowwood (Vibrunum *d*entatum); and • Pussy willow (*Salix Caprea*).	• Will simulate natural growth patterns; • Three to four feet in height; • Bare-root or container grown; • Only materials native to region will be used; • Covered with light mulch of weed free straw if planted during the summer months; and • Woody plants surrounded by an approx. 3 foot diameter ring of woody mulch to a depth of approx. 2 inches or biodegradable plastic or fiber

This conceptual replication plan will be presented to the regulatory agencies as part of the permitting phase. Once consensus is reached on a permittable plan, a draft wetland replication site plan will be developed, and accompanying narrative will be completed. The wetland replication plan, to the extent compatible with the airport's safety needs, will also incorporate important wildlife habitat features into the design including burrowable soils for small mammals, flowering herbs for pollinator species, and dense herbaceous cover, designed to replicate those functions of the impacted wetlands.

5.1.2.3 Wetland Replication Area Construction

Mitigation area permit drawings will include erosion control details, grading plans, planting schedules and plans, and planting notes. Monitoring wells are to be installed. Construction of the wetland mitigation area, including fine grading, soils placement, and planting, shall be done under the supervision of a qualified wetland scientist.

Prior to the commencement of mitigation construction, the mitigation area will be staked out and the selected contractor, Airport representatives and qualified wetland scientist will walk the site to verify limits of work, locations and installation of erosion controls, proposed construction methods, and grade stake elevations.

No plants will be installed until the wetland scientist approves the site, including proposed grading required to maintain/promote sufficient hydrology to support the desired wetland plant communities, the condition of the plant material, and the process of installation. The wetland scientist will be on site to monitor construction of the wetland mitigation area during all phases to ensure compliance with the mitigation plan and to adjust when needed to meet mitigation goals.

5.2 Stormwater Management

Given the funding required for the three major projects (Taxiway B, Taxiway D, Runway 15 Extension) of approximately $60 Million and the likely resultant staggering of project implementation, the Airport intends to secure local, state, regional and federal permits by individual project as may be required. Neither stormwater calculations nor a Stormwater Report were included in this MEPA/NEPA planning phase project, both of which will be produced under the next funding phase of permitting and design. That said, all reasonable measures will be employed in future designs to protect the water quality of the SSA. Submissions under MEPA Notice of Project Changes associated with future permitting projects will describe the proposed stormwater management system for each project/phase and identify BMPs incorporated into the design. It will also describe how the proposed stormwater management system will fully comply with current water quality standards. Design submissions associated with future permitting projects will provide details on the size,

location, and design of proposed stormwater systems which will endeavor to exceed stormwater management standards by incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable.

To the maximum extent feasible, green infrastructure measures will be incorporated to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where not used, the stormwater report and permit application will provide a thoughtful explanation as to why they are infeasible for implementation on-site. The Airport has done an exemplary job of monitoring stormwater and maintaining its current system in a state of good repair, and it will continue to commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.

As described further below, the FAA states that, "Climate Change is leading to an increase in the intensity and frequency of severe weather events, higher temperatures, and more frequent heat waves that will severely impact some airports…" (FAA Action Plan 2021). The projects under the Proposed Action are in line with the efforts of the Airport to be safer, more efficient, and responsive to Climate Change from both an internal outward and an external inward perspective.

Accordingly, the Project will be designed to include stormwater management systems able to accommodate future storms. In future funding phases, identified starting in FY 2025, contingent upon on completion of this environmental planning review phase, stormwater management systems will be designed to comply with state SMS and investigate the feasibility to accommodate future storm conditions within the overall system to be construction as the Airport redevelops existing infrastructure.

5.2.1 Stormwater Treatment Goals

The objective of the stormwater management for the Airport is to mitigate any increase in peak storm runoff rates due to the construction of the proposed runway / taxiway project while improving water quality and resiliency.

MassDEP has implemented the Stormwater Management Standards (Standards) as of November 18, 1996, and updated them in April 2008. These Standards are currently under revision by MassDEP, and it is anticipated that by the time of permitting and construction, a version of the proposed revisions will be the new regulatory standard. With this in mind, each project will be designed such that the standards in place at that future time will be met for new and redeveloped areas.

5.2.2 System Design Parameters and Attributes

As the proposed projects will result in an increase in impervious areas, the proposed stormwater management systems will be designed so that there is no increase overall in post construction discharge rates from the project site. In fact, it is anticipated that all mitigation will be contained entirely within Airport property, having no impact on any of the abutting properties.

An important consideration for projects of this scale is the loss of annual recharge to groundwater. This issue shall be eliminated or minimized through the use of environmentally sensitive site design, stormwater best management practices, and effective operation and maintenance. Annual recharge from the post- development project sites will approximate the annual recharge from pre-development conditions based on soil type. The stormwater management system will be designed to infiltrate the required recharge volume as determined in accordance with the current Massachusetts Stormwater Handbook.

From a stormwater and groundwater perspective, the stormwater management system will be sized to treat for the ½“ to 1” runoff rate as is appropriate based on the varying conditions (non-critical areas to areas of rapid infiltration rates and / or critical areas such as Wellhead Protection Areas) on site and will be applied to the total impervious area for the water quality volume. Where site topography and groundwater elevation preclude the use of infiltration BMPs, industry standard water quality units are proposed that are specifically designed to address water quality prior to discharge. This water quality standard will address Total Suspended Solids (TSS) and Phosphorus (p) removal per the latest revisions to local, state, and federal requirements. Current required TSS removal rates of 80% are expected to be increased to a 90% removal rate in the future, with the design considering this future water quality upgrade in its design.

An operation and maintenance plan for both construction and post-development stormwater controls will be developed. The plan will align with and improve the successful O&M plan in place at the Airport (see **Appendix E** for the Industrial SWPPP) and will include the parties responsible for operation and maintenance at different phases of the project and afterwards with a schedule for inspection and maintenance, including routine and non-routine maintenance tasks.

5.2.3 Proposed Stormwater Control Measures

Outlined below are the numerous stormwater control measures (SCMs) proposed to be used on-site. A selection or combination of the below SCMs may be selected for each project. The runoff will be captured via trench drains and then transmitted to the subsurface infiltration and detention systems. Subsurface conditions (such as permeability of the soil and/or seasonal high groundwater elevation) will be significant factors in the BMP selection(s).

Subsurface Structures (Infiltration Chambers): Subsurface structures are underground systems that receive captured surface runoff, and gradually infiltrate it into the groundwater. These underground infiltration systems can be installed to enhance groundwater recharge. Subsurface structures are constructed to temporarily detain stormwater while it percolates into the underlying soil and are a system already in use in the Airport. Underground infiltration structures will be utilized only where the soil is adequately permeable, and the maximum water table and/or elevation is sufficiently low, however not adjacent to the expanded East Ramp due to the presence of PFAS. They will be used to control the quantity, as well as quality, of stormwater runoff with the structures serving as storage chambers for captured stormwater, while the surrounding soil matrix provides treatment.

Detention Structures: In areas with poorly draining soils, higher water tables, or other soil characteristics not suitable for infiltration, such as the areas near the PFAS caps, Detention Structures are proposed. This post-construction practice consists of water-tight underground chambers designed to detain incoming stormwater runoff thus reducing the peak rates of runoff meeting the SMP requirements. The main reason detention structures would be used is if a 2' or more separation from the bottom of any infiltration and the estimated seasonal high groundwater table (ESHGWT) is not achieved. The Airport does not anticipate using this type of structure.

Deep Sump Catch Basins: Strategically placed in all the apron areas will be deep sump catch basins (also known as oil and grease or hooded catch basins) that will act as underground retention systems designed to remove trash, debris, and coarse sediment from stormwater runoff and protect the groundwater and surrounding water resource areas. These BMPs will also serve as temporary spill containment devices for floatable materials such as oil and grease that provides pretreatment. A 25% TSS removal is awarded to the deep sump catch basin when used as pre-treatment. Deep sump catch basins will be appropriate in the East Ramp where fueling of aircraft takes place; the outflow of would then be directed to a water quality unit and/or to an infiltration BMP.

Water Quality Units (WQUs): Water Quality Units will be used in all apron areas as flow-through structures with a settling or separation unit to remove sediments and other pollutants. They use the power of swirling or flowing water to separate floatables and coarser sediments and will be specifically designed and manufactured to accommodate different design storms and flow conditions.

Detention Basin/ Sediment Forebay: A sediment forebay (not an extended detention basin from a water quality perspective) is a post-construction practice consisting of an excavated pit, bermed area, or cast structure combined with a weir, designed to slow incoming stormwater runoff, and facilitating the gravity separation of suspended solids. A typical forebay is excavated below grade with earthen sides, and used to slow velocities of incoming stormwater, provides TSS removal before discharge. Detention Basins/Sediment Forebays tend to consume large

areas of land, which may in the future, be difficult to meet FAA grading standards. With this in mind, if used, detention basins/sediment forebays should be located outside of runway and taxiway object free areas (ROFA and TOFA). However, sometimes sediment forebays can be much smaller and perhaps be an effective water treatment or pre-treatment BMP before out letting to wetlands.

Rain Garden(s)/ Bioretention: Bioretention is a technique that uses soils, plants, and microbes to treat stormwater before it is infiltrated and/or discharged. Bioretention cells (also called rain gardens) are shallow depressions filled with sandy soil topped with a thick layer of mulch and planted with dense native vegetation. Stormwater runoff is directed into the cell via piped or sheet flow. The runoff percolates through the soil media that acts as a filter. There are two types of bioretention cells: filtering bioretention areas and those configured to recharge groundwater in addition to acting as a filter exfiltrating bioretention areas. Bioretention areas remove pollutants through filtration, microbe activity, and uptake by plants; contact with soil and roots provides water quality treatment better than conventional infiltration structures. Studies indicate that bioretention areas can remove from 80% to 90% of TSS. If properly designed and installed, bioretention areas remove phosphorus, nitrogen, metals, organics, and bacteria to varying degrees. Bioretention areas help reduce stress in watersheds that experience severe low flows due to excessive impervious cover. Bioretention areas are suitable for vehicular parking areas, roadways, and around hangar buildings. They are not suitable for airfield areas near taxiways and runways.

Sand Filters: Also known as filtration basins, sand and organic filters consist of self-contained beds of sand or peat (or combinations of these and other materials) underlaid with perforated underdrains. Sand filters improve water quality by straining pollutants through a filtering media and by settling pollutants on top of the sand bed and/or in a pretreatment basin. Sand filters are rarely used, because besides apron areas, airfields are relatively "clean" environments that do not have a lot of pollutants. When sand filters are used, it is in an area that requires a higher level of pollutant or TSS removal (i.e. potentially next to any maintenance areas).

Infiltration Trenches: Infiltration trenches are shallow excavations filled with stone. They can be designed to capture sheet flow or piped inflow. The stone provides underground storage for stormwater runoff. The stored runoff gradually exfiltrates through the bottom and/or sides of the trench into the subsoil and eventually into the water table. Infiltration trenches can be installed at the toe of slope just outside of runway and taxiway safety areas.

Vegetated Filter Strips: Vegetated filter strips, also known as filter strips, grass buffer strips and grass filters, are uniformly graded vegetated surfaces (i.e., grass or close-growing native vegetation) that receive runoff from adjacent impervious areas. Vegetated filter strips are used to pretreat sheet flow or small concentrated flows from roads, highways, and small parking

lots. Vegetated filter strips are designed to slow runoff velocities, trap sediment, and promote infiltration, thereby reducing runoff volumes. Vegetated Filter Strips can be used for TSS removal on the airfield prior to entering a closed drainage system.

Grassed Channel/Swale: Grassed channels (formerly known as Biofilters swales) are treatment systems with longer hydraulic residence time than drainage channels. The removal mechanisms are sedimentation and gravity separation rather than filtration. Grassed Channels/Swales also can be used for TSS removal on the airfield prior to entering a closed drainage system.

Tree Box Filters: The Tree Box Filter consists of an open bottom concrete barrel filled with a porous soil media, an underdrain in crushed gravel, and a tree. Stormwater is directed from surrounding impervious surfaces through the top of the soil media. Stormwater percolates through the media to the underground. Treated stormwater beyond the design capacity is directed to the underdrain where it may be directed to a storm drain, other device, or surface water discharge. Advantages of using tree box filters are that they provide pretreatment to stormwater, provides decentralized stormwater treatment, and they can reduce the volume & rate of runoff. Tree box filters can be used in auto parking lots if the "tree" does not pose a hazard to air navigation.

5.2.4 Low-Impact Development

The objective of the stormwater management for the site is to mitigate any increase in peak storm runoff rates due to the construction of the proposed taxiway / runway project as well as to use Low Impact Development (LID) and Green Infrastructure design considerations.

As outlined above, there are limitations in certain LID stormwater best management practices (BMPs) to be used on an aviation site due to permanent pool or open water systems attracting waterfowl and thus creating safety hazards (specifically *Advisory Circular No. 1501.5200-33 "Hazardous Wildlife Attractions On or Near Airports"* See Section 2.3.2 of AC: designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48–hour detention period after the design storm and to remain completely dry between storms…*).* However, as part of the LID approach the designers will combine hydrologically functional site design with pollution prevention measures to compensate for any land development impacts on hydrology and water quality.

The Project is proposing to use infiltration BMP's where existing soil conditions allow (based on water table plus soil characteristics and chemical characterization) that preserve and maintain essential hydrologic functions of the development site and local watersheds. This will also include the use of at-source control approach, in contrast to the end of pipe control approach and pretreatment green infrastructure BMP's such as drainage swales, biofilters, and other methodology to remove 44% TSS removal prior to any infiltration BMP.

To the maximum extent feasible, green infrastructure measures will be proposed to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where LID systems can be used, the consultant will provide an explanation of why the specific LID systems are appropriate. LID systems that transmit runoff / stormwater while draining within 24 hours following a 1- or 2- year storm event and within 48 hours of a 10-year storm will be implemented. These systems will be placed outside critical aviation zones for grading/slopes and may include a variety of BMP's listed above.

5.2.5 Sizing

In order to mitigate larger future storm events, all Stormwater Control Measures will be designed and installed for easy expansion. The subsurface infiltration and detention systems are to be constructed from chambers which are modular in nature and can be added onto existing systems in the future.

5.2.6 Adaptation and Resiliency

The proposed stormwater design for each project is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1 inches) from the Resilient Massachusetts Action Team (RMAT) Tool for the runway extension and taxiways. The 2070 100-year return period volume for aviation hangars and buildings (24-hour rainfall volume of 11.0 inches) from the current 100-year storm (7 inches) to the 2070 50-year storm (9.4 inches) will be addressed in stormwater management designs.

In order to mitigate the future 2070 50-year storm event and the 2070 100-year storm volume for aviation hangars and buildings, all SCMs will need to be expanded by an estimated 50%. The new subsurface infiltration and detention systems could be constructed from chambers which are modular in nature and can be added onto existing systems in the future.

Private developers will implement future hangar development. The Airport will implement construction requirements that assure that applicable stormwater management systems for all future hangar and building development will be designed pursuant to the 2070 100-year return period volume (24-hour rainfall volume of 11.0 inches).

5.2.7 Construction Period Stormwater Management

The projects will each have a Soil Erosion and Sediment Control Plan during construction specifically designed to control erosion at its source with temporary control structures and to minimize the runoff from areas of disturbance by de-concentrating and distributing stormwater runoff through natural vegetation before discharge to critical zones such as streams or wetlands. Since there is a potential for encountering residual contamination from closed releases (e.g., RTN 4-26225), soil and groundwater will be managed in accordance with the requirements of the MCP. Pending the project sequencing, the work will be performed

under the Preliminary Response Action or Comprehensive Response Action provisions of the MCP, as applicable. At this time, it is anticipated that soil will either be reused on-site during construction, stockpiled in accordance with the MCP for future reuse, or transported offsite for reuse, recycling, or disposal. While it is not expected that significant groundwater management will be encountered as part of this project, if groundwater is encountered it will either be recharged in accordance with local, state, and federal regulations, treated and discharged to surface water in accordance with requirements of the NPDES DRGP, or collected and transported offsite for disposal.

The Soil Erosion and Sediment Control Plan will be enacted at the onset of the first phase of construction to protect the resource areas during construction. The erosion control devices will remain in place until all exposed areas have been stabilized with vegetation or impervious surfaces. This plan will be incorporated into the stormwater pollution prevention plan (SWPPP) for Projects identified herein with land disturbance of greater than 1 acre. The Airport and selected contractor will need to seek coverage under the 2022 (or its replacement) EPA NPDES Construction General Permit (CGP), which requires a SWPPP. The Airport or its designee will regularly inspect the active construction sites for compliance with the SWPPP and make sure that appropriate erosion control measures are in place and working properly.

In addition, construction will be phased out so that disturbed areas are minimized to the extent feasible. The SWPPP and selected BMPs will be finalized as construction methods and schedule are determined by the selected contractor. The SWPPP will be finalized prior to construction, updated as necessary during construction, and maintained throughout the period of construction. In addition, construction activities will comply with the FAA Advisory Circular 150/5370-10H (Latest Version), Airport Construction Standards. Site plans included in the SWPPP will depict sedimentation and erosion control measures and EPA and MassDEP BMPs to control and reduce sediments and dust in stormwater discharges to the extent feasible, in accordance with NPDES requirements.

5.3 Compliance with Criteria for the Evaluation of Application for Discharge of Dredged or Fill Material

As detailed above, the Airport has avoided, minimized, and mitigated impacts to jurisdictional Waters of the United States (WOTUS) to the maximum extent practicable consistent with state and local regulatory performance standards and Section 404(b)(1) Guidelines employed by the Corps and EPA under the federal Clean Water Act. Future projects will be designed to comply with the WQC regulations codified in 314 CMR 9.00. These regulations contain Criteria for the Evaluation of Applications for Discharge of Dredged or Fill Material (314 CMR 9.06). Under 314 CMR 9.06(1) through (7), the proposed activities conform to the 401 WQC criteria as follows.

5.3.1 Compliance with 314 CMR 9.06

> ***314 CMR 9.06(1) (in part) - No discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences …***

As discussed in the Draft EA/EIR and further in Chapter 2 of this document, an alternatives analysis was completed to demonstrate there is no practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem.

> ***314 CMR 9.06(2) - No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will avoid and minimize potential adverse impacts to the bordering or isolated vegetated wetlands, land under the water or ocean, or the intertidal zone. For discharges to bordering or isolated vegetated wetlands, such steps shall include a minimum of 1:1 restoration or replication. The Department may waive the requirement for 1:1 restoration or replication for projects which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth pursuant to 314 CMR 9.06(8). However, no such project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species as specified in 310 CMR 10.00.***

Appropriate and practicable steps have been taken to avoid and minimize potential adverse impacts, as discussed above. Wetland replication will be provided for unavoidable discharges of fill to Vegetated Wetlands (i.e., WOTUS) at a ratio of 1:1. The replicated wetland will be located within the same hydrologic unit as the impacted area. Section 5.1.2 above describes proposed mitigation measures for fill impacts.

The project limits are not mapped as Estimated or Priority Habitat for rare vertebrate or invertebrate species, as specified in 310 CMR 10.00.

> ***314 CMR 9.06(3)(a) through (k) (in part) – No discharge of dredged or fill material shall be permitted to Outstanding Resource Waters, except for the activities specified in 314 CMR 9.06(3)(a) through (k), which remain subject to an alternatives analysis and other requirements of 314 CMR 9.06 and/or 314 CMR 9.07 …***

This criterion is not applicable. No discharge of dredged or fill material is proposed within vernal pools or other Outstanding Resource Waters.

314 CMR 9.06(4) – Discharge of dredged or fill material to an Outstanding Resource Water specifically identified in 314 CMR 4.06(1)(d) (e.g., vernal pools, within 400 feet of a water supply reservoir and any other areas so designated) is prohibited as provided therein unless a variance is obtained under 314 CMR 9.08.

This criterion is not applicable. No discharge of dredged or fill material is proposed within an Outstanding Resource Water per 314 40.06(1)(d).

314 CMR 9.06(5) – No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. Discharge of dredged or fill material may be permitted to manage stormwater for flood control purposes only where there is no practicable alternative and provided that best management practices are implemented to prevent sedimentation or other pollution. No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater in Outstanding Resource Waters for any purpose.

The project does not involve a discharge of fill material in a wetland for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation.

314 CMR 9.06(6)(a) through (f) (in part) – Except as otherwise provided in 314 CMR 9.06(6), stormwater discharges shall be provided with stormwater best management practices to attenuate pollutants and to provide a setback from the receiving water or wetland in accordance with the following Stormwater Management Standards as further defined and specified in the Massachusetts Stormwater Handbook …

The Taxiway D project, as a redevelopment project, will comply with the MassDEP Stormwater Standards to the maximum extent practicable. See Section 5.2 above for further discussion.

314 CMR 9.06(7) – No discharge of dredged or fill material shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface Waters of the Commonwealth.

As discussed in Section 5.1.1, the project will not result in substantial adverse impacts on the physical, chemical, or biological integrity of surface Waters of the Commonwealth.

5.3.2 General Performance Standards of 314 CMR 9.07(1)

The project will comply with the general performance standards defined at 314 CMR 9.07(1):

> ***(a) No dredging shall be permitted unless appropriate and practicable steps have been taken which will first avoid, and if avoidance is not possible then minimize, or if neither avoidance or minimization are possible, then mitigate, potential adverse impacts to land under water or ocean, intertidal zone and special aquatic sites. No dredging shall be permitted if there is a practicable alternative that would have less impact on the aquatic ecosystem. An alternative is practicable if it is available and capable of being implemented after taking into consideration; costs, existing technology and logistics in light of overall project purposes and is permittable under existing federal and state statutes and regulation.***

As discussed in Chapter 2.0, an alternatives analysis was completed to demonstrate there is no practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem. Dredging has been minimized and mitigated to the extent practicable for the preferred alternative, as described in Section 5.1.1 above.

> ***(b) All applications, except for maintenance projects, shall include a comprehensive analysis of practicable alternatives as defined in 314 CMR 9.07(1)(a). The scope of alternatives to be considered shall be commensurate with the scale and purpose of the proposed activity, the impacts of the proposed activity, and the classification, designation and existing uses of the affected wetlands and waters in the Surface Water Quality Standards at 314 CMR 4.00.***

An analysis of alternatives is presented in Chapter 2.0.

> ***(c) Dredging and dredged material management shall be conducted in a manner that ensures the protection of human health, public safety, public welfare and the environment.***

The project will comply with this standard. Dredging will occur within cofferdams, which will isolate the work area from the lacustrine environment. Additionally, public safety and welfare will be maintained by restricting public access to the work site during construction activities.

> ***(d) Applications submitted to the Department shall meet the criteria and performance standards of 314 CMR 9.07. If the project submitted by the applicant does not meet a particular provision of 314 CMR 9.07 and criteria of 314 CMR 4.00, the applicant shall demonstrate to the Department's satisfaction that the project will provide an equivalent level of environmental protection.***

The project will meet all criteria and performance standards of 314 CMR 9.07.

(e) Dredged material shall not be disposed if a feasible alternative exists that involves the reuse, recycling, or contaminant destruction and/or detoxification. An evaluation of whether such an alternative is feasible shall consider:

1. ***the volume and physical characteristics of the dredged material;***
2. ***the levels of oil and/or hazardous materials present within the dredged material;***
3. ***the relative public health and environmental impacts of management alternatives; and***
4. ***the relative costs of management alternatives.***

The Airport intends on meeting the applicable dredging performance standards during the Master Plan projects, including in the design and permitting phases. Additional sampling will be conducted as may be necessary and appropriate disposal options will be evaluated at that time.

(f) The Department may consider any additional information including but not limited to that submitted under MEPA or NEPA on impacts from the dredging activity, management of the dredged material, the alternatives available for reuse or disposal techniques, alternative sites for the various management activities, or information related to other Department programs.

The Airport intends on meeting the applicable dredging performance standards during the Master Plan projects, including in the design and permitting phases. One project involves the dredging of sediment related to taxiway construction.

(g) Dredged material management activities or facilities subject to the 401 Water Quality Certification, shall comply with the provisions of 314 CMR 9.00 and the conditions of the 401 Water Quality Certification. The Certification does not relieve the proponent of the obligation to comply with all other applicable federal, state and local statutes and regulations.

The project will comply with all other necessary regulatory approvals.

(h) Dredged material, including sediment, placed on or in the land at an upland location is subject to the release notification requirements and thresholds of 310 CMR 40.0300 and 40.1600 for soil, unless such placement is in accordance with the provisions of 3 10 CMR 40.0317(10) and 314 CMR 9.07 (4), (6), (9), (10), or (11).

The selected Contractor will be required to adhere to any applicable release notification requirements, pending selection of the final sediment reuse or disposal option.

(i) No dredging is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. Dredging may be permitted to manage stormwater for flood control purposes only where there is no practicable alternative and provided that best management practices are implemented to prevent sedimentation or other pollution. No dredging is permitted for the impoundment or detention of stormwater in Outstanding Resource Waters.

This provision is not applicable since no dredging is proposed for management by impoundment of stormwater.

(j) No dredging shall be permitted in rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of waters of the Commonwealth.

The project will not result in substantial adverse impacts on the physical, chemical, or biological integrity of surface Waters of the Commonwealth. As discussed in Section 5.1 above, the project has been designed to avoid, minimize, and mitigate impacts to jurisdictional WOTUS to the greatest extent feasible. Rather, the project will positively impact the water quality of the Upper Gate Pond by improving water quality of existing stormwater discharges.

(k) No dredging shall be permitted in Outstanding Resource Waters, except for the following activities specified in this paragraph, which remain subject to an alternatives analysis and other requirements of 314 CMR 9.07....

This criterion is not applicable because Upper Gate Pond is not an Outstanding Resource Water.

(l) Notwithstanding any other provision of 314 CMR 9.07, the Department may allow a project which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth. Such projects include, but are not limited to, dam removal, salt marsh restoration, stream restoration, nutrient management, control or removal of aquatic nuisance vegetation, or vegetation management to improve wildlife habitat.

This criterion is not applicable.

5.3.3 Dredging Performance Standards

The project will comply with the dredging performance standards defined at 314 CMR 9.07(3):

(a) The resuspension of silt, clay, oil and grease and other fine particulate matter shall be minimized to protect aquatic life and other existing and designated uses of waters of the Commonwealth.

As discussed in Chapter 2.0, the project has been designed to avoid, minimize, and mitigate impacts to jurisdictional WOTUS to the greatest extent feasible.

> ***(b) Improvement dredging activities shall minimize and, to the maximum extent possible, avoid affecting areas of ecological importance including but not limited to vegetated wetlands, shellfish habitat, spawning habitat, habitat of state-listed rare wildlife, salt marsh, intertidal zone, riffles and pools, and vegetated shallows.***

Improvement dredging is not proposed as part of this project.

> ***(c) Where feasible, a minimum of 25 feet shall remain unaltered between the edge of vegetated wetlands, salt marsh or vegetated shallows, and waterward edge of the top of the slope of a dredging area.***

Insofar as dredging is necessary to remove unsuitable materials for the base of Taxiway D within the limits of BVW and LUW, dredging will impact vegetated wetlands along the limits of Upper Gate Pond. Appropriate best management practices such as metal sheet pile cofferdams and turbidity curtains will serve to isolate the work area and protect the adjacent BVW. The project will not impact salt marsh, or vegetated shallows.

> ***(d) Dredging shall not be undertaken during migration, spawning, or juvenile development periods of finfish, shellfish, crustaceans or merostomatans in locations where such organisms may be affected, except as specifically approved by the Department. Restricted time periods for dredging, or in-water sediment management, will be established by the Department after consultation with Massachusetts Division of Marine Fisheries or Division of Fisheries and Wildlife. Any applicant proposing to dredge during the recommended restricted time period must demonstrate to the Department's satisfaction that measures to minimize impacts (e.g., dredging in the dry, the use of silt curtains, etc.) will be sufficient to avoid adverse affects to the species of concern….***

There are no time-of-year restrictions (TOYR) for Upper Gate Pond identified by DMF or DFW.

> ***(e) In evaluating the potential effects of suspension of contaminated sediment on aquatic organisms, the Department may compare the bulk sediment chemistry with recognized guideline values…***

The Airport intends on meeting the applicable dredging performance standards during the Master Plan projects, including in the design and permitting phases. Additional sampling will be conducted as may be necessary and appropriate disposal options will be evaluated at that time.

Chapter 6.0

Climate Change

6.0 CLIMATE CHANGE

As required by the MEPA regulations under 301 CMR 11.07, and NEPA regulations such as the CEQ interim National Environmental Policy Act *Guidance on Consideration of Greenhouse Gas Emissions and Climate Change* document, issued in 2023, this section of the Final EIR assesses the potential impacts of the proposed Projects as it relates to climate change/climate change impacts and presents revised mitigation plans as part of the Final EIR to address and offset these impacts.

Previous chapters addressed other initiatives that also address Climate Change: electric aircraft (Chapter 4) and future storm events, precipitation data and adaptive strategies for stormwater management (Chapter 5).

6.1 New Infrastructure Over Next 20 Years and Associated GHG Commitments

The federal government and the states have all committed to working towards a more sustainable future through having a goal of being net-zero carbon by 2050. As everyone, including Airports, is moving towards achieving these climate change related reductions for greenhouse gas (GHG) emissions, the proposed Projects include efforts and mitigation by the Airport aligned with these goals.

In Massachusetts, the Executive Office of Energy and Environmental Affairs (EOEEA) and the Massachusetts Emergency Management Agency (MEMA) lead the Resilient MA Action Team (RMAT), an interagency team comprised of Climate Change Coordinators from each Secretariat who are supported by agency staff, stakeholders, and subject matter experts. The RMAT oversees the Design Standard Tools (the RMAT Tool), which is a tool that entities can enter project information into to see potential climate impacts. There were a number of areas in which the Airport improvement projects received a "high exposure" rating: extreme heat, extreme precipitation in relation to riverine and urban flooding, and sea level rise/storm surge. While the Projects may be impacted by climate change in these ways, there are also aspects of the project which will respond to and reduce climate risks, hazards, and increase resiliency to the transportation infrastructure in the region.

The proposed Project is consistent with, and responds to future climate scenarios (e.g., heat impacts) by adding runway length to maintain safe aircraft operations. As described in the DRAFT EA/EIR, the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) 2018[1], notes "high temperatures may also impact airplane operations. If the length of existing runways is not sufficient under higher temperature conditions, planes may not be able to take off when

[1] https://www.mass.gov/info-details/massachusetts-integrated-state-hazard-mitigation-and-climate-adaptation-plan

there is less lift available [and] high temperatures and dense air conditions could lead to increased runway length requirements for aircraft due to diminished performance in such conditions."

As noted in the Draft EA/EIR, the Airport has reviewed the output report generated from the RMAT Tool (see **Appendix G** of the Draft EA/EIR) to identify whether the climate parameters for sea level rise/storm surge and extreme precipitation (urban or riverine flooding), ranked "High," would affect the surrounding areas and also EJ population(s). (See **Table 6.1-1**). For additional details on the Climate Resiliency and GHG Emissions analysis, please refer to the Draft EA/EIR Sections 5.7 and 6.4

Table 6.1-1 RMAT Tool - Asset Preliminary Climate Risk Rating

	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Runways and Taxiways	Low Risk	High Risk	High Risk	High Risk
Terminal Building	Low Risk	High Risk	High Risk	High Risk
Hangar Development Areas	Low Risk	High Risk	High Risk	High Risk

6.1.1 Extreme Heat

The Municipal Vulnerability Preparedness (MVP) report for the Town of Barnstable[2] predicts future weather conditions to include more frequent heat waves and droughts, as well as changes to coastal resource areas, with significant implications for the seasonal economy. In Massachusetts, temperatures are projected to increase significantly over the next century. Winter average temperatures are likely to increase more than those in summer. Estimates for the rise in temperatures is up to 3.6°F by 2030 (Resilientma.org, Interactive Map). To address extreme heat, and heat related impacts, municipalities can adopt and encourage green infrastructure, white roofs, landscaping for parking lots and redevelopment.

The Airport's large amount of open space, including the significant areas of grasslands and forested areas, functions as green infrastructure providing evapotranspiration and cooling benefits to surrounding areas helping to minimize and reduce the potential for heat island impacts beyond the Airport boundaries.

[2] Town of Barnstable Municipal Vulnerability Preparedness Report, 2020.

The Urban Heat Island (UHI) effect is not expected as a result of the Project's new pavements as areas of the Airport are balanced by ample vegetation (trees, grass, shrubs) on the airfield surrounding impervious/paved areas. Any obstruction removal activities (off-Airport) within future easement areas consist of selectively cutting trees that penetrate the airspace. Tree removal from airspace allows for forest understory to regrow to heights that do not penetrate the protected airspace.

Vegetated areas, including grassland areas, on and off the Airport, will continue to function as a vegetation buffer (providing cooling via evapotranspiration) to surrounding neighborhoods, reducing the potential for UHI surrounding the Airport.

While UHI is not anticipated as an impact, as noted in the Final EIR, and detailed in Sections 6.2.1 and 6.2.1.1 below, the Proponent has made new commitments to replant trees on Airport and off-Airport in association with the Greening Hyannis/Gateways program to address losses of trees as a result of the Project. The replanting of trees will provide cooling benefits to roadways, parking areas, and surrounding areas. Also, replanting of trees will provide new carbon sequestration benefits.

6.1.2 Extreme Precipitation and Flooding

Future climate predictions for the Northeast suggest more frequent and intense rainfall, with an average annual precipitation increase of 4.42 inches by 2090 (ReslientMA.org/maps, RCP4.5 scenario). All current and future upgrades to the stormwater management system will be designed and sized to accommodate the storm events listed in Sections 6.1.2.1 and 6.4.2 of the Draft EA/EIR for each rain event to account for the predicted increase in rainfall quantities and frequency for the region. The Airport is not located within a mapped floodplain.

The Projects will be designed to meet the updated MassDEP stormwater management requirements (pending in 2024) for reconstruction of existing infrastructure and additional pavement associated with the runway extension. These stormwater features will upgrade outdated or undersized stormwater infrastructure as construction takes place.

6.1.3 Sea Level/Storm Surge

The Project received a "Low Risk" rating because of the following: Increased impervious area, and, maximum annual daily rainfall exceeding 10 inches within the overall project's useful life.

However, the model noted no historic flooding at the Project Site and existing impervious area of the Project Site is between 10% and 50% - an expected value based on the use as an air transportation facility. No impacts are anticipated to or from sea level and /or storm surge, as the Airport is a sufficient distance away from the coastline to have impacts from this climate category.

6.1.4 GHG Emissions from Aircraft

The Federal Aviation Administration (FAA) released a Final rule on April 26, 2024, to limit carbon particles emitted by subsonic aircraft engines (e.g., with speeds less than 250 mph). This rule sets maximum standards for the amount of non-volatile particulate matter (nvPM) emissions from U.S. civil aircraft engines. It aligns with Environmental Protection Agency recommendations and International Civil Aviation Organization standards.

Engine manufacturers will have new emissions standards to follow to reduce harmful effects to health and the environment. This new rule gives manufacturers certainty about nvPM emissions criteria that they can use in developing the next generation of aircraft engines.

Over the next 20 years, ways the Airport is moving towards a more sustainable future are:

- Following of the current FAA standards for the amount of carbon that can be emitted through subsonic aircrafts;
- The development of a future microgrid/smart grid project that enables electric vehicle charging stations and electric airplane charging stations. The availability of charging stations will be necessary as individuals and corporations are moving away from carbon - based forms of energy and GHGs towards electric sources of energy; and
- Sustainable Aviation Fuels are being developed by industry and the federal government[3]. When these non-GHG fuels are available, the Airport will make them available to aircraft.

These efforts are described further in Sections 4.5 and 6.1.5.

6.1.5 Designated Electric Vehicle Charging Stations

Under the Town's Energy Reduction Plan (ERP) and green vehicle procurement policy, the Cape Cod Gateway Airport has already installed eight (8) electric vehicle (EV) charging stations using the Massachusetts' charging station program. Eight (8) additional EV charging stations are anticipated to be added to the Airport during the Airport improvement projects. These additional charging stations will allow Airport staff and customers to charge their electric vehicles and promote less waiting for charging stations overall. As more and more people are turning to purchasing electric vehicles to individually fight climate change, more EV charging stations will be needed.

As stated in the Draft EA/EIR and committed to in the Final EIR, the Airport will make available designated EV charging stations as the increase in people purchasing EVs continues and the subsequent demand of EV charging stations goes up. The proposed Electric Vehicle Supply

[3] https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuels

Equipment (EVSE) at the Airport is an important component to support the developing EV charging network on Cape Cod. The Airport plays a role in the development of this network as part of a cooperative, coordinated approach with both public and private partners. The project will contribute to the build out of a regional EV charging network including public access to and availability of EVSE.

6.2 Minimization of Tree/Shrub Clearing and Land Disturbance

6.2.1 Tree Replanting

The Final EIR has updated the number of trees (~7. 5 acres) that will be required to be removed and converted to pavements to make room for the projects (6.6 acres for the East Ramp development, and 0.9 acres associated with Taxiway D). Additionally, Taxiway D and runup area will result in 0.9 acres of shrub removal to pavements, see **Figure 6.2-1**.

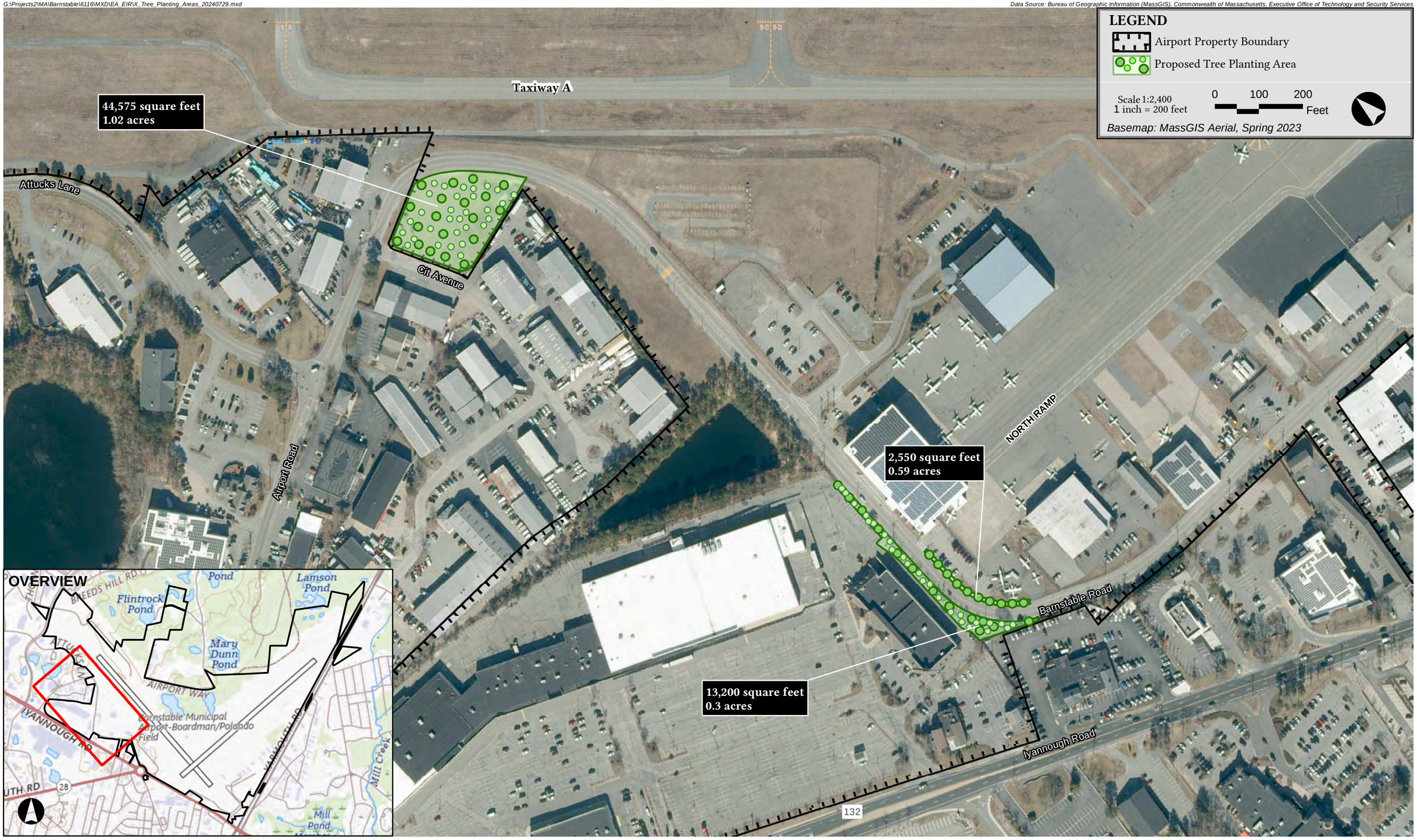
Table 6.2-1 Summary of Tree Cutting Impacts by Area

Project	Total Impacts	Tree Removal and Change to Pavement (acres)	Tree Removal with Vegetation Remaining (acres)	Brush/Shrub Removal and Change to Pavement (acres)	Proposed Work Components
Aeronautical Development (East Ramp)	6.6 ac (287,496 sf)	6.6 ac	0	0	Tree cutting and removal of vegetation for construction of future aircraft hangars
Taxiway D and Runup Pad Relocation	2.2 ac (95,832 sf)	0.90 ac	0.40 ac	0.90 ac[(a)]	Tree cutting and removal within areas of proposed pavement - along Taxiway safety area and side slopes, tree removal area will be graded and restored to grass.
TOTAL	**8.8 ac (383,328 sf)**	**7.5 ac (326,700 sf)**	**0.4 ac (17,424)**	**0.90 ac (39,204 sf)**	

a) The Airport currently maintains vegetation around the areas of Upper Gate Pond and Lewis Pond within the Runway Visibility Zone to prevent trees from visually obstructing this area. The proposed Taxiway D will result in approximately 1.9 acres of this area comprised of a shrub layer to be graded and maintained as grass within the side slopes adjacent to Upper Gate Pond. For the purposes of this analysis, grasses and shrub layers are assumed to provide comparable levels of carbon sequestration, as grasses sequester carbon year-round without releasing it. Of the total area, approximately 0.9 acres will be converted from a brush/shrub layer to pavement.

G:\Projects2\MA\Barnstable\6116\MXD\EA_EIR\X_Tree_Planting_Areas_20240729.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Cape Cod Gateway Airport Barnstable, Massachusetts

Figure 6.2-1
Proposed Tree Planting Areas

Estimates provided for the level of carbon sequestration from forested areas and reductions associated with tree removal are updated in the Final EIR. To estimate carbon sequestered (in metric tons of CO_2) for an acre of forest in one year, the number of acres was multiplied by -0.84 metric ton CO_2 acre/year, see **Table 6.2-2.**

Table 6.2-2 Carbon Sequestration Estimates

Project	Area of Tree Removal and Conversion to Non-vegetated Land (Pavement)	Carbon Sequestration by Acre Per Year (MTs) (a)(b)	Total Change (Loss) in Carbon Sequestration (MT) (c)
Aeronautical Development Areas (East Ramp)	6.6 ac (287,496 sf)	-0.84 metric ton CO_2 acre/year	+5.54 MT Carbon/Year
Taxiway D and Runup Pad Relocation	1.8 ac (78,408 sf)	-0.84 metric ton CO_2 acre/year	+1.51 MT Carbon/Year
TOTAL	**8.4 ac (365,904 sf)**		**+7.05 MT Carbon/Year (15,542 lbs./Year) +211 MT Carbon over 30-Year Period**

a. Metric Ton (1.1 Short Tons) = 2,204 lbs.
b. A carbon sequestration factor was derived from EPA's estimate in *U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* of 0.57 metric tons of carbon sequestered per hectare per year (or 0.23 metric tons of carbon sequestered per acre per year). https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, 9/7/2023.
c. 1The negative value in this equation indicates carbon sequestration. A positive value indicates a loss in carbon sequestration.

The above analysis of carbon sequestration and project related losses to carbon sequestration from tree removals within areas of the Airport being converted from forested area to pavement, equals, in one-year, an estimated loss to carbon sequestration of +7.05 MT Carbon/Year (15,542 lbs./Year). Similarly, the loss is approximately +211 MT Carbon over a 30-Year Period. One-time releases of carbon stored within trees is estimated at 173 MT/C[4].

The Airport will replant trees on-site and off-site to offset losses in carbon sequestration from trees that were removed during the span of the project. Replanting trees and shrubs is proposed as mitigation, because trees naturally sequester carbon in their structures. Similarly, other plant species (grasses) also sequester carbon, so increasing the native vegetative species in the area will only be helpful to address climate change and to reduce carbon levels in the atmosphere.

[4] The analysis uses 55 MT/C/Hectare (22.26 MT/C/Acre for the above ground forest biomass store of carbon to arrive at an estimate of up to 173 MT/C released from carbon stores due to cutting. However, the project is anticipated to result in a lower amount as carbon stores being released as wood products post-harvest will be reused on site (e.g., wood chips) and will keep carbon within the materials.

6.2.1.1 Replanting Locations

The Airport will seek to revegetate, restore, and implement site landscaping as shown in **Figure 6.2-1**, with native tree, shrub, and grass species, as these will provide multiple benefits that derive from maintaining and restoring native habitats. The climate benefit includes ecosystem services such as filtering of air pollutants (such as carbon sequestration), water pollutants, and creating habitats for wildlife and native pollinators.

While a landscaping plan has not yet been developed and types of trees have not yet been selected, the Proponent estimates that plantings of native species on the Site will sequester an estimated 15 tons of CO_2 per acre over 30 years. When applied to the 1 acre (detention pond site), and along both sides of approximately 1,800 LF of Barnstable Road that will be planted, this equates to 25-30 tons of CO_2 stored on the Site at the end of the 30-year period. When it comes to restoring native species at and around the Airport, the Restoration process will be consistent with CCC's *Wildlife and Plant Habitat Technical Bulletin: Objective WPH2 Methods*.

Land southwest of Runway 15 along Airport Road

In terms of locations to add new tree plantings on Airport property to offset the tree removal associated with the Master Plan projects, the Proponent agrees to place trees in a currently open, undeveloped plot of land that is to the southwest of the end of Runway 15, along Airport Road (facing the non-Airport side of the road) see **Figure 6.2-1**. To the north of the detention pond, the Proponent also proposes to have a paved path in this area originating from Cit Avenue through the plot of land in question and having trees planted and a bench or two placed along the proposed path. The path will serve a public purpose allowing an outdoor walking path for citizens, especially citizens visiting the adjacent businesses.

Barnstable Road and Capetown Plaza Shopping Mall

Additionally, another proposed location for tree planting would be along Barnstable Road, starting from the Capetown Plaza Shopping Mall and continuing South and East along Barnstable Road, see **Figure 6.2-1**. Capetown Plaza Shopping Mall is owned by Cape Cod Gateway Airport, and the Airport has been talking for several years about how this area could be beautified. Tree and shrubbery plantings near the Shopping Center and along Barnstable Road on both sides of the roadway would allow this area to be more aesthetically pleasing and would also allow carbon sequestering plants and trees to be added to ultimately offset the tree cuttings from the Master Plan projects.

Additional Off-Airport Tree Replanting Locations

The project proponent will also explore off-property methods of tree planting that would also help fight climate change. The Town of Barnstable has been awarded a grant to plant 2,400 trees in the Town's Environmental Justice communities through the "Greening the Gateway

Cities Grant Program." Environmental Justice communities tend to be areas that have more pollution in air and water than the rest of the population. The Airport will coordinate with the program to support several trees being planted that compensate for the proposed Projects removal of trees. The Airport supports the Greening the Gateway Program as it will add to the clarification of Environmental Justice communities' air, which adds to a healthier community in Barnstable.

This Greening the Gateway project will fight the pollution in the air for Environmental Justice populations, and the Airport is fully supportive of this and will actively be involved in the planting of new vegetation.

6.2.2 Reuse of Cut Wood

To reduce the losses from the land clearing and decrease the Airport's carbon footprint, the Airport will mark a portion of the cut trees for chipping on site and reuse the wood chips as mulch within areas of the Airport where covering soil can reduce maintenance needs (i.e. along fence lines, within stormwater areas, landscaped areas, and on pathways). To ultimately keep track of cut trees, the Airport will document the amount and types of trees being removed. The Airport's landscaping plan will take tree cuttings and reuse of wood into consideration when developed during the design phase of the project.

This reuse will help reduce greenhouse gas emissions from the proposed tree cutting by taking away the need for vehicle transport of the wood chips off premises and eliminating the need for disposal of the wood chips whether it be on the Airport premises or off-site.

6.3 Proponent's Commitments to GHG Reduction

The Proponent is committed to environmental stewardship and has detailed its commitments to mitigate Projects GHG emissions. As the Project's' design develops further, the Proponent expects that additional measures described previously, or possibly new technologies developed in the interim period, may be adopted that will further decrease GHG emissions. Previous efforts the Airport had taken relative to climate over the years has included the following investments to promote energy conservation and efficiency at the Airport:

- Two solar fields (24,640 solar panels in total) on the northern side of the Airport property, occupying approximately 25 acres of Airport property and the adjacent Fire District property. The solar fields generate approximately 6.7 megawatts (direct current or DC) of energy and are estimated to offset more than 5,000 metric tons of CO2 emissions annually;
- Upgraded Airport street and parking lot lights to LED using Cape Light Compact's lighting program;
- Installed electric vehicle charging stations in three parking lot locations;
- Worked with Cape Air to install roof mounted solar arrays on two leased hangars; and
- Purchased electric, solar and propane mowing equipment.

The Proponent as part of mitigation for the proposed Project will continue investments and efforts relative to GHG reducing measures throughout the life of the Project. The Proponent is committed to the following mitigation elements for the Project:

- Replanting trees on Airport with locations compatible with airspace surfaces and in conjunction with the Greening Hyannis program;
- Reusing cut wood materials from the Projects when tree cutting takes place so that losses of carbon are reduced by reuse of wood onsite as landscaping materials, weed suppression, and in stormwater management areas;
- Providing new EV Charging Stations; and
- Implementing the necessary infrastructure to support the use/adoption of electric aircraft.

The Proponent is committed to implementing the measures to reduce GHG emissions presented in this Final EIR but must retain an amount of design flexibility to allow for changes that will inevitably occur as the design progresses. If, during design of the Project, a specific combination of design strategies proves more advantageous from an engineering, economic, or safety perspective, the design project may vary from what has been described herein.

As detailed in Section 1.5, the Airport Projects are funded via a state and federal funding process occurring over 5 years in three separate phases: Planning, Design/Permitting, and Construction through the Capital Improvement Plan (CIP). Because the Final EIR describes projects over a longer period, such as a 20-year Master Plan, design for these infrastructure projects is limited to a conceptual, pre-25% design level at this time.

Certain information as requested in the Certificate on the Draft EA/EIR is not available until further engineering design is completed for specific projects upon receipt of funding. It is proposed that a supplemental submittal be prepared for each major project documenting compliance with the Massachusetts Stormwater Standards and Greenhouse Gas Emissions requirements via modeling and calculations though a Notice of Project Change (NPC) and the provision of Final impact numbers, regardless of whether or not they exceed a new MEPA review threshold or change more than 20%. This process would be completed in parallel with Cape Cod Commission review, via an amendment process.

The major projects proposed for this process are:

- Taxiway B;
- Taxiway D;
- Runway 15 Extension; and
- East Ramp Hangar Development in current, unaltered areas only.

The North Ramp area is primarily paved or previously disturbed and is not included in the above list for these reasons.

The Airport is making commitments for compliance with regulations and standards and describing the design approach conceptually for the above referenced projects. It is anticipated that the NPC would provide additional details and documentation such as stormwater management calculations demonstrating compliance with standards and consistency with the conceptual design such as requested on p. 26 of the Draft EA/EIR Certificate. Furthermore, for any new buildings, expansions, or additions, the Proponent will commit:

- High performing envelope that complies with the 2023 Stretch Code envelope performance requirements;
- 100% heat pump space heating;
- Energy recovery ventilation per the 2023 Stretch Code update;
- Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed;
- Roof to be constructed PV-ready;
- Installed electric vehicle (EV) charging spaces with quantity to be determined;
- EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.

Upon completion of the projects, the Proponent will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the project. Details of the Proponent's implementation of mitigation measures will also be included.

Chapter 7.0

Solid & Hazardous Waste

7.0 SOLID AND HAZARDOUS WASTE

This chapter provides an update on the Airport's practices related to the storage and management of solid and hazardous wastes. In accordance with the MEPA scope for the Final EIR, the following information is provided below: (1) a list of chemicals used at the Airport and how the chemicals are stored and managed; (2) the Airport as a generator of hazardous waste and/or waste oil; (3) PFAS contamination, past and ongoing mitigation, and whether a RAM Plan is needed; and (4) soil sampling results and the Airport's avoidance of future soil and groundwater contamination.

7.1 Storage and Management of Solid and Hazardous Wastes

The Airport and its users as a part of their operations use/store certain chemicals on Airport property necessary for aircraft fueling and maintenance operations. The locations and size of petroleum storage for aircraft operations at the Airport, along with spill protection measures at each site are provided in Table 7.1-1 through Table 7.1-3 below. These locations are depicted on the Oil and Hazardous Materials Storage Map prepared by Horsley Whitten Group in **Appendix D, Figure 2**.

Table 7.1-1 Airport Virgin Petroleum Storage

Operator	Location	Product	Tank Type	Spill Protection	Volume (Gallons)
Atlantic Aviation	Gate P fuel farm	Avgas / Jet A	AST	Overfill protection, steel secondary containment	10,000 /10,000
Griffin Avionics	Griffin fuel farm	Avgas	UST	Overfill protection, cathodic protected steel, interstitial monitoring	10,000
Cape Air	Inside Cape Air Hangar	Avgas	Portable AST	Spill containment pallet	100
Hertz Car Rental	Barnstable Road – Service Lot	Unleaded gasoline	UST	In tank monitor	10,000
Cape Cod Gateway Airport	Gate F fuel farm	Unleaded gasoline	AST	Overfill protection, steel secondary containment, interstitial monitoring	4,000
		Diesel	AST		4,000
		Jet A	AST		20,000

AST - aboveground storage tank
UST - underground storage tank
Source: Barnstable Municipal Airport Spill Prevention, Control, and Countermeasure Plan, 2020.

Table 7.1-2 Airport and Tenant Mobile Refuelers

Operator	Product	Number of Refueler Trucks	Truck Designation	Storage Capacity (Gallons)
Cape Cod Gateway Airport	Jet A	3	55931 / 55932 / 5251	5,000 / 5,000 / 3,000
Atlantic Aviation	Avgas	1	44219	1,500
Atlantic Aviation	Avgas	1	5693	3,000
Cape Air	Avgas	1	4298	1,500
Griffin Avionics	Avgas	2	612 / 4134	620 / 1,200

Source: Barnstable Municipal Airport Spill Prevention, Control, and Countermeasure Plan, 2020.

Table 7.1-3 Airport OHM Storage Locations

Operator	Location	Product	Storage Vessel Type	Spill Protection	Volume (Gallons)
Cape Cod Gateway Airport	Outside Airport ARFF/SRE Building	Waste Oil / Anti-freeze	AST	Leak detection, double walled with reinforced concrete	350 / 150
	Inside Airport ARFF/SRE Building	Antifreeze / 15W-40 / Grease / Hydraulic Oil / ATF / 5W-30 Synthetic / Waste Oil	Drums	Spill Containment Pallet	55
Atlantic Aviation	Gate P Fuel Farm	Waste absorbent material / waste Avgas	Drums	Spill Containment Pallet with overhead cover	55 / 55
Atlantic Aviation	Inside Hangar	Waste Oil / Waste Absorbent	AST /Drums	Double walled / Spill Containment Workstation with Lid	55 / 55
Griffin Avionics	Inside Griffin Hangar	Used Oil filters	Drums	Spill Containment Pallet	55
Cape Air	Inside Cape Air Hangar	Waste oil	AST	Overflow Detection, Double Walled	500
		Waste oil / Hydraulic Oil / Used Oil filters /Antifreeze	Drums	Spill Containment Pallet	55
Gull Air	Inside Gull Air Hangar	Waste Oil	Drums	Spill Containment Pallet	55
AMA Nantucket Inc.	Inside Hangar Nantucket Inc. Hangar	Waste Oil / Mineral Spirits	Drums / Drums	Spill Containment Pallet / Spill Containment Pallet	55 / 55

Table 7.1-3 Airport OHM Storage Locations (Continued)

Operator	Location	Product	Storage Vessel Type	Spill Protection	Volume (Gallons)
Cape Flight Instruction	Inside Hangar	Waste oil / Antifreeze / used oil filters	Drums	Spill Containment Pallet	55
Avis Car Wash	Barnstable Road – Service Lot	Car Washer Fluid	AST	OWS	250
Hertz Car Wash	Barnstable Road – Service Lot	Car Washer Fluid	AST	OWS	250

AST - aboveground storage tank
SRE – snow removal equipment
OWS – oil water separator
ARFF – Airport rescue and fire fighting

Source: Barnstable Municipal Airport Spill Prevention, Control, and Countermeasure Plan, 2020.

7.1.1 Aircraft and Vehicle Maintenance Practices and Pollution Reduction and Control

As listed above in Tables 7.1-1 through 7.1-3, there are a number of chemicals used in the fueling of aircraft and other vehicles or in the maintenance of aircraft or other vehicles. For each type of chemical, there is a spill protection protocol that the Airport uses to minimize the risk from spills and runoff associated with fueling and maintenance practices.

Further, the Airport, in accordance with Code of Federal Regulations 40, Subpart 112 (40 CFR 112), maintains a Spill Prevention, Control, and Countermeasure Plan (SPCCP) to minimize the risk associated with bulk storage and transfer of Oil and Hazardous Materials (OHM). This plan is updated periodically as facility design, construction, operation or maintenance conditions and projects warrant.

A rapid spill response trailer is maintained at the Airport ARFF/SRE Building for responding to any spills or releases at the Airport. Inventories of clean up materials are conducted regularly, and out-of-date equipment is replaced. A smaller spill kit is also maintained on each of the Airport's Mobile Refuelers, at the Gate F Fuel Farm, and at the Airport ARFF/SRE Building waste oil and anti-freeze storage aboveground storage tank (AST). Each tenant involved in the storage or transfer of fuel is responsible for maintaining their own spill response resources on each of their vehicles and at fuel storage locations. The SPCC Plan details the potential flow pathways for each fuel storage and transfer area and oil and hazardous material container storage area. All fuel storage areas have double walled tanks and leak detection systems installed.

The Airport conducts regular inspections of all OHM storage areas including fuel storage tanks, mobile refuelers, waste storage area, and drum storage areas. Inspections are conducted by properly trained Airport personnel and are recorded on inspection sheets. Inspection sheets are kept on file at the Airport Operations office for a minimum of three years, as required by 40 CFR 112.7.

7.1.2 Hazardous Waste and Waste Oil

Under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et. seq, the Airport is categorized as a "Generator." The Airport's EPA Identification number is MAC300009198.[1] Under RCRA, the Airport is a Large Quantity Generator (LQG) which means that the Airport generates 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.[2] The RCRA regulations in 40 CFR part 262 for Large Quantity Generators requires the following:

- "Waste can only be stored on-site for 90 days;
- There is no limit on the quantity of the hazardous waste on site;
- Waste must be managed in tanks, containers, drip pads or containment buildings;
- LQGs must comply with the manifest (shipping document EPA Form 8700-22) requirements;
- LQGs must comply with the preparedness, prevention, and emergency procedures in addition to the land disposal restriction requirements, and;
- LQGs must submit a biennial hazardous waste report (EPA Form 8700-13A/B)."[3]

Under the State standards of the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. Chapter 21E) and the Massachusetts Hazardous Waste Regulations (310 CMR 30.00 et seq.), the Airport is a Small Quantity Generator, which means the Airport generates "between 220 and 2,200 pounds per month (roughly 27 to 270 gallons), and/or up to 1 kilogram (2.2 pounds) of acutely hazardous waste per month.[4]

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1 State of Massachusetts, List of Massachusetts Hazardous Waste Generators, Excel Spreadsheet located at https://www.mass.gov/guides/hazardous-waste-generation-generators, April 8, 2024.

2 EPA, Large Quantity Generators, https://www.epa.gov/hwgenerators/categories-hazardous-waste-generators, April 8, 2024, citing 40 CFR Part 262.

3 Id.

4 State of Massachusetts, Hazardous Waste Generation and Generators, https://www.mass.gov/guides/hazardous-waste-generation-generators, April 8, 2024.

7.2 Upper Gate Pond and Lewis Pond Sediment Results Analysis

Concerns relative to contamination in Upper Gate and Lewis Pond sediments have been previously investigated by the Airport, and a Permanent Solution Statement with No Conditions under MassDEP's Waste Site Cleanup Program was prepared by Horsely Witten Group for the Airport in November of 2023. The statement focused on polycyclic aromatic hydrocarbons (PAHs) and lead discovered in sediments within Upper Gate Pond and Lewis Pond. The paragraphs below summarize the findings from the investigation into the pond sediments:

"A forensic evaluation of the data verified that the (PAHs) detected in the sediments are consistent with engine emissions from vehicles or aircraft that enter the ponds, outfalls, and infiltration basins from the Airport's stormwater management system, and the elevated lead can be attributed to use of leaded aviation gasoline and/or historic use of leaded gasoline in vehicles."[5] "Municipal water and groundwater samples collected from monitoring wells located in proximity to the Ponds did not indicate exceedances of the applicable Method 1 groundwater standards."[6]

"The Imminent Hazard Evaluation was prepared consistent with 310 CMR 40.0950. The highest detection of PAHs and Lead … was used for the evaluation. As indicated on the Imminent Hazard Short Form included in Appendix B, the Hazard Index is less than 1 and the excess lifetime cancer risk is less than 1 in 100,000. No stressed biota, fish fills, abiotic conditions or other conditions which produce an immediate or acute impact to freshwater fish were identified. As such, an Imminent Hazard to Human Health or the environment does not exist based on the levels of PAHs and lead detected in the sediment."[7] See **Appendix G**.

As noted in the excerpts above, the investigation did not find exceedances of the applicable Method 1 for groundwater and the levels of contamination did not present an imminent hazard to human health or the environment due to level of PAHs and lead detected in the sediment.

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5 Horsely Witten Group, Permanent Solution Statement with No Conditions, RTN 4-28577, November 2023, Page 11.

6 Id.

7 Id. at 14.

7.3 PFAS Contamination and Mitigation

PFAS (Per & Polyfluoroalkyl Substances) contamination has been noted at the Cape Cod Gateway Airport since 2015 due to its use of firefighting foam that contains PFAS. PFAS are a class of synthetic chemicals that are used in consumer and industrial products.[8] The hazards of PFAS to humans came into the public eye in the mid-2010s even though PFAS has been used in many common products since the 1940s.[9] PFAS are known to be "persistent in the environment, bio-accumulative in organisms, and toxic at relatively low ppt levels."[10] There are links between PFAS and cancer, lowered birth weights, and negative compromises to human's immune systems.[11]

In 2015, the Cape Cod Gateway Airport ceased use of PFAS Aqueous Firm Forming Foam (AFFF) for "tri-annual exercises and annual testing." In 2016, Cape Cod Gateway Airport purchased an ecological unit to test AFFF consistency to meet annual FAA testing requirements before it was recommended by the FAA. Also in 2016, the Airport successfully cleaned up an AFFF release from the response to an aircraft accident using contractors and vacuum trucks. The AFFF was removed from the catch basin and disposed of properly off site.

In 2016, the Airport started the process of reporting and analyzing PFAS contamination at the Airport following the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. Chapter 21E), the regulations of the Massachusetts Contingency Plan (210 CMR 40.00 et seq.), and a Notice of Responsibility issued to the Airport by MassDEP for the Airport to conduct additional field investigations to evaluate "(1) sources of PFAS detected in groundwater at the Airport; (2) sources of 1,4-dioxane detected in a monitoring well downgradient of Airport on the Maher Well field property; and (3) potential impacts to public water supply wells operated by the Hyannis Water District at the Mary Dunn and Maher Well fields."[12] The Airport submitted a proposed Immediate Response Action (IRA) Plan to MassDEP to answer the Notice of Responsibility that would "serve as the guide for the soil and groundwater testing conducted since November 2016."[13]

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8 Andrew J. R. Gillespie, Ph.D., US EPA's Science-Based Approach to Understanding and Managing Environmental Risk from PFAS, EPA Presentation found at: tps://www.epa.gov/sites/default/files/2020-09/documents/epa_pfas_rd_overview_complete_2020_09_25.pdf, September 2020.

9 Id.

10 Id.

11 Chemsec, PFAS Movement, www.chemsec.org/pfas, April 8, 2024.

12 Horsley Witten Group on behalf of Cape Cod Gateway Airport, Final IRA Status Report 14, IRA Completion Statement, Phase IV Final Inspection, Report and Completion Statement, and Phase V Status Report, April 2024, Section 2.1.

13 Id at 2.1.

In June of 2019, MassDEP issued a "Request for Modified IRA Plan/Interim Deadline" that required the Airport "to reduce infiltration of precipitation through PFAS-impacted soil, such as temporarily capping the source areas; excavating and properly disposing of the PFAS-impacted soil; or some equivalent approach."[14]

A Final Immediate Response Action Plan Modification was submitted by the Airport in response that detailed installation of a cap in two places on Airport property to ultimately "reduce precipitation infiltration."[15] Each year since 2016, the Airport has followed the law and regulations to test, monitor and submit the proper reports regarding PFAS contamination at the Airport. The Phase IV Report (see **Appendix C**) details the soil samples taken at the Airport between the years of 2016 and 2023, with the final soil samples taken in December of 2023.[16] With the reporting, the Airport also has been engaging the public to keep everyone informed on the steps to combat PFAS contamination that the Airport is taking on. There has been a total of four public meetings regarding PFAS cleanup, monitoring, and mitigation: one held in 2019, one held in 2022, and two held in 2023 with annual meetings planned for November each year as the airport steps into Phase V in 2024[17]

Since the initial PFAS finding, the Airport has been utilizing remediation tools in order to contain the PFAS plumes as removing all PFAS from the Airport soil is "economically infeasible;" soil caps have been installed in two different places at the Airport as described previously in Section 3.4.1. The capped areas "total approximately 94,100 square feet and represent a majority of the known PFAS source areas."[18] The caps will prevent the contaminated soil from becoming loose and infiltrating clean areas and will prevent contaminated PFAS substances from leaching into the groundwater from stormwater exposure.

The caps have significantly reduced the concentrations of total PFAS in groundwater in the vicinity of the Deployment Area and ARFF/SRE Area, as indicated on Table 3 and the time plots presented in **Appendix C**. See Chart 7.3-1 below for a graphical depiction of this data.

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14 Id. at Section 2.1.

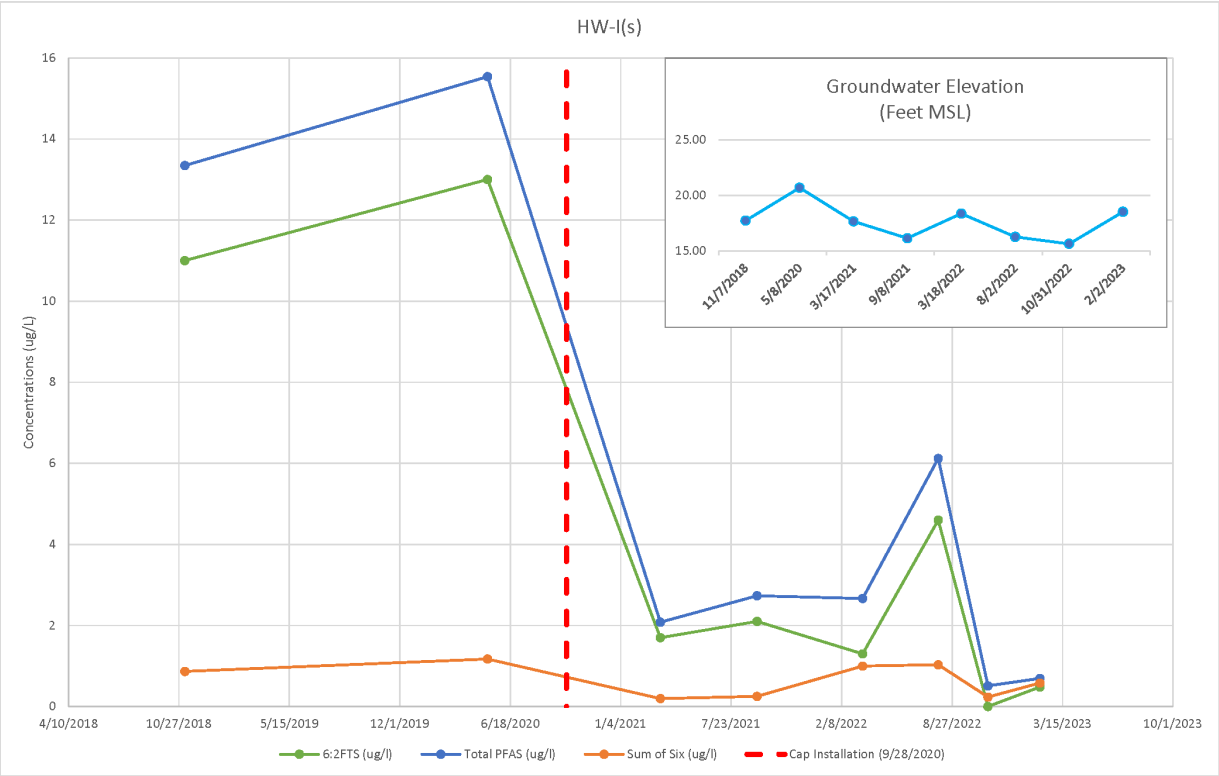
15 Id. at Section 2.1.

16 Id. at Section 3.1.

17 Cape Cod Gateway Airport, PFAS, www.flyhya.com/Airport-info/pfas/, April 8, 2024 (whole paragraph based on this citation).

18 Id. at Section 2.1.

Chart 7.3-1 Deployment Cap Effect on Groundwater Quality[19]



Fluctuations in the concentrations of PFAS is expected as the groundwater level rises and falls over the next several years and contaminants are flushed from the capillary fringe zone above the water table After flushing is complete, concentrations associated with the Airports PFAS Plume are expected to decline. The effectiveness of the caps will be documented through the collection of groundwater samples until a Permanent or Temporary Solution can be achieved. The caps will be inspected twice annually and maintained as necessary until a Permanent or Temporary Solution can be achieved. Assuming that the future Permanent or Temporary Solution relies on the caps to maintain a level of no significant risk, the caps will be maintained and inspected in the future in accordance with an Activity and Use Limitation (AUL).

During its investigation, the Airport identified several non-Airport PFAS related plumes that are located hydraulically upgradient (i.e., the Barnstable Fire Training Academy - RTN 4-0026179), downgradient, and/or cross-gradient of the Airport but not on Airport property, thus from other industrial/commercial sites. These plumes are not related to the Airports PFAS plume and are the responsibility of others. These plumes have been brought to the attention

[19] Source: Horsely Witten Group, December 2023 PIP Presentation.

of MassDEP and others by the Airport. If a Responsible Party can be identified by the MassDEP, they will issue a Notice of Responsibility requiring the Responsible Party to initiate investigation and cleanup activities. The Airport is not responsible for PFAS plumes relating to non-Airport sources.

In the future, the Airport will be monitoring and reporting soil results through a Phase V Inspection Report to track PFAS contamination and to document that PFAS in soil is not migrating beyond the caps, potentially impacting groundwater.

Chapter 8.0

Mitigation & Draft Section 61 Findings

8.0 MITIGATION AND CHAPTER 61 FINDINGS

8.1 Introduction

M.G.L.c.30, s.61 requires that "[a]ll authorities of the Commonwealth … review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and … use all practicable means and measures to minimize [their] damage to the environment. … Any determination made by an agency of the Commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact." Each state agency that issues a permit for the Project shall issue a Section 61 Finding in connection with permit issuance, identifying mitigation that is relied upon to satisfy the Section 61 requirement. A proposed Section 61 Finding is provided in Section 8.3, and a table of mitigation measures is included as part of the Section 61 Finding. All mitigation will be the responsibility of the Proponent.

8.2 Anticipated State Permits and Approvals

Table 8-1 lists potential State Actions required by the Project.

Table 8-1 Anticipated State Permits and Approval

Agency	Action/ Relevant Projects
Massachusetts Department of Transportation-Aeronautics Division	Airspace Coordination under M.G.L. c. 90 § 35B Airspace Coordination as governed by the building code under 780 CMR 111.7
Massachusetts Department of Environmental Protection	Superseding Order of Conditions under Wetlands Protection Act M.G.L. c. 131 § 40. (if necessary)
Massachusetts Department of Environmental Protection	401 Water Quality Certificate.

8.3 Proposed Section 61 Findings

Project Name:	Cape Cod Gateway Airport Master Plan Improvement Projects
Project Location:	Hyannis, MA
Project Proponent:	Cape Cod Gateway Airport
EEA Number:	16640
Date Noticed in Monitor:	9/24/2024

The potential environmental impacts of the Project have been characterized and quantified in this Final Environmental Assessment/Final Environmental Impact Report dated September 3, 2024, which are incorporated by reference into this proposed Section 61 Finding. Throughout the planning and environmental review process, the Proponent has been working to develop measures to mitigate significant impacts of the Project.

The Proponent recognizes that the identification of effective mitigation, and implementation of that mitigation throughout the life of the Project, is central to its responsibilities under MEPA. The Proponent has accordingly prepared the annexed Table of Impacts and Mitigation Measures that specifies the mitigation that the Proponent will provide.

Now, therefore, [AGENCY], having reviewed the MEPA filings for the Project, including the mitigation measures itemized on the annexed Table of Impacts and Mitigation Measures, finds pursuant to M.G.L. C. 30, S. 61, that with the implementation of the aforesaid measures, all practicable and feasible means and measures will have been taken to avoid or minimize potential damage from the Project to the environment.

_____

[Agency]

_____

By

_____

[Date]

Table 8-2 describes the mitigation measures related to the required state actions and the schedule for implementation in addition to identifying the construction period mitigation measures. The Proponent will be responsible for all mitigation measures.

Table 8-2 Summary of Mitigation Measures

Mitigation Measures	Schedule	Cost
Water Resources		
♦ Use of a 2:1 side slope to construct Taxiway D to minimize impacts to wetland and water resource areas associated with Upper Gate Pond ♦ Construction of an approximately 2,100 sf BVW replication area for mitigation compliance for MassDEP ♦ Full compliance with Massachusetts Stormwater Management Standards for impervious surface additions ♦ Utilization of revised rainfall intensities by NOAA Atlas 14, Point Precipitation Frequency Estimates for future climate conditions. ♦ Stormwater Best Management Practices to be incorporated into design include: o Infiltration chambers or leaching basins with pre-treatment o Vegetative strips o Oil/Water separators. ♦ Updates to Airport's MSGP SWPPP and SPCC plans, as necessary. ♦ Groundwater monitoring to track PFAS plume at Airport. ♦ Construction period stormwater management best practices	During and post construction.	Included in the overall Project cost
Wetland resource areas will be protected from direct impacts, including erosion and sedimentation, during construction. ♦ EPA NPDES Construction General Permit will be obtained for each project and a construction period SWPPP will be developed and implemented. ♦ Work in the water of Upper Gate Pond will require the use of a coffer dam in two discrete areas. Water within the work zone encompassed by the coffer dam will need to be pumped out. This area will be pumped into straw bale basins or filter bags. The basins will consist of a ring of staked straw bales overlain by non-woven geotextile filter fabric and crushed stone. Discharge water will be pumped into the basin and allowed to drain through the fabric onto relatively-flat stabilized surfaces. ♦ Dewatering structures will be placed as far away from vegetated wetland resources as possible.	During operation	Included in the overall Project cost

Table 8-2 Summary of Mitigation Measures (Continued)

Mitigation Measures	Schedule	Cost
Water Resources		
♦ No fueling or lubrication of equipment will be performed within 100 feet of vegetated wetlands, streams, or vernal pools. A spill kit will be kept on site by the site contractor.		
Climate and Greenhouse Gas Emissions		
♦ New or renovated buildings will meet 2023 Stretch Energy Code measures including: o High performing envelope that complies with the 2023 Stretch code envelope performance requirements; o 100% heat pump space heating; o Energy recovery ventilation per the 2023 Stretch code update; ♦ Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed; ♦ Roof to be constructed PV-ready; ♦ Installation of electric vehicle (EV) charging spaces, quantity to be determined; ♦ EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined. ♦ 110 acres of dense forest exists north of Upper Gate Pond and Lewis Pond, Airport's forests land within this area results in 92.40 MT/C/Year in carbon sequestration. ♦ Plantings of native species on the Site will sequester an estimated 15 tons of CO_2 per acre over 30 years[1]	Design and post construction	Included in the overall Project cost

[1]A carbon sequestration factor was derived from EPA's estimate in *U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* of 0.57 metric tons of carbon sequestered per hectare per year (or 0.23 metric tons of carbon sequestered per acre per year). https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, 9/7/2023.

Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)

Mitigation Measures	Schedule	Cost
Natural Resources		
♦ Recycling of asphalt for base course for new taxiway and runway surfaces or in other locations on the airfield such as the perimeter access road ♦ Stockpiling of excess aggregate from grading / excavation activities for use as fill material ♦ Reuse of wood chips from tree removal ♦ Tree planting program for areas of the airport compatible with airspace surfaces	Ongoing, During and post-construction	Included in the overall Project cost
Noise		
♦ Installation of noise barrier along the runup pad for the relocated Taxiway D adjacent to the existing runup pit ♦ Evaluation of voluntary noise abatement flight procedures for visual flight rules ♦ Voluntary quiet hours between 10 p.m. and 6 a.m. ♦ Voluntary avoidance of touch and go nighttime operations ♦ Multiple noise complaint reporting mechanisms including in person, over the phone or online https://flyhya.com/pilot-info/noise-abatement/) ♦ Consultation with FAA and primary Airport air taxi operators on flight path and approach angle modifications for take-offs and landings that may serve to minimize noise impacts. Every reasonable effort will be made to minimize the noise impacts from construction activities, including: ♦ Limiting construction to weekdays between 7 AM and 5 PM; ♦ Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers; ♦ Muffling enclosures on continuously running equipment, such as air compressors and welding generators;	Ongoing, During and post-construction	Included in the overall Project cost

Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)

Mitigation Measures	Schedule	Cost
Noise		
♦ Replacing specific construction operations and techniques by less noisy ones where feasible; ♦ Selecting the quietest of alternative items of equipment where feasible; ♦ Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels; ♦ Turning off idling equipment; and ♦ Locating noisy equipment at locations that protect sensitive locations by shielding or distance.		
Biological Resources		
♦ Necessary tree removal of 7.5 acres will be accomplished during time periods appropriate for minimizing impacts to any potential bat populations outside of the summer roosting period (April through September), and optimally during the winter months (October 1 through March 31 when possible). ♦ No work will occur within NHESP mapped habitat and there will be no impacts to state-listed species. ♦ Wildlife habitat features to be incorporated into wetland replication area	Ongoing, During and post-construction	Included in the overall Project cost
Hazardous Materials		
♦ Soil, sediment, groundwater, and surface water will be managed in accordance with the requirements of the MCP. Pending the project sequencing, the work will be performed under the Preliminary Response Action or Comprehensive Response Action provisions of the MCP, as applicable. Existing PFAS disposal site caps will not be altered or impacted. ♦ At this time, it is anticipated that excess soil or sediment will either be reused on-site during construction, stockpiled in accordance with the MCP for future reuse, or transported offsite for reuse, recycling, or disposal in accordance with all local, state, and federal regulations.	Ongoing, During and post-construction	Included in the overall Project cost

Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)

Mitigation Measures	Schedule	Cost
Hazardous Materials		
♦ If soil is reused during construction, it is anticipated that the soil will be reused in the general proximity of the location of the original excavation. If excess soil is retained for future reuse, it will be placed in an area designated by the Airport for materials management. Soil placed in the Airport materials management area(s) will be covered with polyethylene sheeting to minimize potential fugitive dust or otherwise stabilized. Secondary containment such as berms will be installed, as necessary, to prevent sediment in runoff from leaving the material management area.Groundwater and surface water will either be treated and discharged to surface water in accordance with requirements of the NPDES DRGP, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal. ♦ Excavation and management of soil contaminated with, or potentially contaminated with, OHM will be conducted in general accordance with Response Action Performance Standards (RAPS) as defined in the MCP (310 CMR 40.0191). ♦ Construction projects will be completed in accordance with requirements of MCP provisions for the various response actions across the Airport		
Air Quality		
Measures to mitigate construction-related air quality impacts will include: ♦ Using wetting agents on areas of exposed soil on a scheduled basis; ♦ Using covered trucks; ♦ Minimizing spills on the construction site; ♦ Monitoring actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized; ♦ Minimizing storage of debris on the Project site; ♦ Periodic street and sidewalk cleaning with water to minimize dust accumulations; ♦ The contractor will comply with the National Emission Standards for Hazardous Pollutants (NESHAP) throughout demolition and construction activities;	During construction.	Included in the overall Project cost

Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)

Mitigation Measures	Schedule	Cost
Air Quality		
♦ Using equipment retrofitted with diesel emissions control devices. The Proponent will specify during the procurement of the subcontractors, that the majority of the heavy equipment operating on the Project site be retrofitted with diesel emissions control devices; ♦ Maintaining an "idle free" work zone of fossil fuel trucks and equipment by providing supplemental hoisting and pumping equipment along with "just-in-time" delivery methods. On-site idling will be limited to five minutes. "Do Not Idle" signs will be posted at appropriate locations; ♦ By locating combustion engines away from sensitive receptors such as fresh air intakes, air conditioners and windows; and ♦ Using Ultra Low Sulfur Diesel for all trucks and construction machinery as required by the US EPA.		
Stormwater Management		
For construction period stormwater management: ♦ Each project disturbing greater than 1 acre will develop a Stormwater Pollution Prevention Plan (SWPPP) that complies with the EPA construction general permit for stormwater discharges will be developed. ♦ Construction will be planned so that disturbed areas are minimized to the extent feasible ♦ Sedimentation and erosion controls will be incorporated into design and construction practices.	Before and during construction	Included in the overall Project cost
Historical, Archeological, and Cultural Resources		
♦ Protection of archeological sites during construction will include: ♦ Construction personnel briefing; ♦ High visibility fencing with No Trespassing signs around the sensitive cultural resource areas to be protected. ♦ Pre-and post-construction inspections.	Before and during construction	Included in the overall Project cost

Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)

Mitigation Measures	Schedule	Cost
Traffic and Transportation		
Construction period traffic will be managed to minimize off-airport impacts including the following: ♦ The Proponent will coordinate with the Town of Barnstable to discuss transportation-related construction-period impacts;	Before and during construction	Included in the overall Project cost
♦ Police detail officers will be used as necessary and as required by the towns to facilitate and maintain safe and efficient passage of vehicles and pedestrians during construction; ♦ Prior to the start of construction, the general contractor will submit a Construction Period Traffic Management Plan to the Town. The plan will identify designated construction truck routes and any temporary roadway improvements necessary to accommodate truck traffic, while maintaining safe and efficient passage for vehicles, pedestrians, and bicyclists; ♦ The Proponent will avoid full or partial street closures to the extent possible. Should a partial street closure be necessary to accommodate materials transport or construction-related activities, the closure will be limited to off-peak hours.		
♦ Parking for construction workers will be provided within the Project site, and workers will be prohibited from parking along adjacent roadways.	Before and during construction	Included in the overall Project cost
♦ Evaluation of traffic demand management opportunities ♦ Electric Vehicle charging stations and providing electrical conduit for future EV stations	Post construction.	Included in the overall Project cost

Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)

Mitigation Measures	Schedule	Cost
EJ & Public Health		
♦ The Project is consistent with the MEPA Public Involvement Protocol for Environmental Justice Populations (effective date of January 1, 2022). Public participation will meet or exceed the requirements of the EJ Policy. ♦ The Project has made and will continue to make diligent effort to promote public participation opportunities for all members of the public, including those with limited English proficiency (see Table 9.2-1).	Prior to and during construction	Included in the overall Project cost
The Project is also consistent with the MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations (effective date of January 1, 2022). An enhanced analysis of potential impacts to all populations, including EJ populations, has been conducted and mitigation measures identified (see section 5.16.2). Impacts are anticipated to primarily result from construction-related activities. They will be temporary and minimized through several measures described above under traffic, air quality, and noise.	During construction	Included in the Project cost
The Project will promote climate change resiliency and minimize potential effects from climate change to surrounding communities including EJ populations. The Airport has adopted several green initiatives to reduce greenhouse gas emissions including installation of EV charging stations and will install a stormwater management system designed to reduce runoff and flooding.	During construction and operation	Included in the Project cost

Chapter 9.0

Response to Comments

9.0 RESPONSE TO COMMENTS

This Chapter provides responses to the comment letters received by the Secretary of the Massachusetts Executive Office of Energy and Environmental Affairs during the review of the Draft Environmental Assessment and Environmental Impact Report. The comment letters have been annotated and individual comments coded in the right-hand margin. The responses to the comments are listed below with the corresponding code numbers and a brief synopsis of the comments. Comment letters were received from the following agencies, organizations, and individual members of the public: Massachusetts Executive Office of Energy and Environmental Affairs; U.S. Environmental Protection Agency- Region 1; Cape Cod Commission; Massachusetts Dept. of Env. Protection-Southeast Regional Office; Sierra Club-Cape and Islands Group; Chris Greeley; Thomas Collier; and Karen Ingemie.

Table 9-1 Secretary's Certificate and Comment Letters

Commenter	Abbreviation
Massachusetts Executive Office of Energy and Environmental Affairs Secretary's Certificate on the ENF	MEPA
U.S. Environmental Protection Agency- Region 1	EPA
Cape Cod Commission	CCC
Massachusetts Dept. of Env. Protection-Southeast Regional Office	DEP
Sierra Club-Cape and Islands Group	SC
Christine Greeley	CG
TJ Sully	TS
Diane LeDuc	DL
Association to Preserve Cape Cod, Inc.	APCC
Linda Bollinger, Hyannis Park Civic Association	LB
Betty Ludtke	BL
Galileo Faria	GF
Helyne Medeiros	HM
Walter Spokowski	WS
Thomas Collier	TC
Karen Ingemie	KI

MEPA 01 **The FEIR should describe any changes to the project since the filing of the DEIR. It should identify, describe, and assess the environmental impacts of any changes to the project that have occurred between the preparation of the DEIR and FEIR.**

The Final EIR provides new and updated information on additional alternatives to Taxiway D, which were analyzed include a no impact alternative, and one other alternative resulting in reduced impacts to Upper Gate Pond resource areas. This document has presented a new preferred alternative which minimizes wetland impacts associated with Taxiway D and has identified a wetland mitigation site for these impacts and conceptual plan.

Wetland mitigation details and locations are provided in Chapter 5, along with additional information on the proposed stormwater management design and features to address project stormwater runoff as well as future climate related concerns. This information includes new a stormwater analysis and information on the proposed initial stormwater design details, location, and sizes.

Climate related Information on the plan to address losses of carbon sequestration from aeras of proposed tree cutting or vegetation has been added to Chapter 6: Climate Change, along with carbon mitigation options, commitments to support local tree replanting efforts, and identification of areas within airport property to be replanted as an offset.

The airport is continuing to advance its microgrid/smart grid plans with MassDOT Aeronautics Division's Engineering, Planning and Environmental staff (via a federal grant) that will allow the airport to develop independent power sources for the airport, along with sustainable energy options and battery storage - the micro grid. This will be separately developed from this EA/EIR.

The microgrid is not per se mitigation for the proposed projects but is discussed in the Final EIR within the context of airport related actions taken to reduce overall environmental impacts of all airport activities and projects. The microgrid is also a key initiative of the airport to provide the necessary infrastructure for the electric aircraft sector and enable this technology to be employed at CCGA – along with the air and noise emission benefits that they bring. The micro grid is key to enabling local and regional solutions to charging electric vehicles and RTA fleets and serve the EJ Communities.

MEPA 02 **The FEIR should also include an updated list of required Permits, Financial Assistance, and other state, local and federal approvals and provide an update on the status of each of these pending actions. It should also describe a mechanism for conducting more detailed reviews of future projects through the filing of NPCs.**

An updated list of anticipated required permits and approvals from local, state, and federal agencies is provided in Table 1.5-2. The process for reviewing future projects through the filing of NPCs is described in Section 1.5.

For the Phase 2 Project components, the Airport will file a Notice of Project Change (NPC) if there is any material change in the Project prior to the taking of all agency actions. The NPC will specify the details of any change in the project and information provided previously in the FEIR.

Prior to filing the NPC, the Airport will consult with the MEPA Office and any participating state agencies to determine if an NPC is required. The Airport will also schedule a pre-filing meeting with the MEPA Office to discuss unique aspects of the project/change and anticipated filing requirements. If an NPC is required, the Airport will include the following items within its submittal:

- A completed NPC form which clearly identifies the MEPA review thresholds that the project meets or exceeds, any outstanding Agency Actions that it may require, and Agency Actions that have already been taken. The Airport will also provide a Supplemental narrative and tables in the NPC form to clarify aspects of the project or its impacts.
- The NPC will include also include a supporting project narrative with a detailed project change description, an alternatives analysis, evaluation of potential environmental impacts, and a description of mitigation measures. Supporting studies or technical analysis will be appended to the ENF or provided as attachments.
- The MEPA required filing documents, including the following: One electronic copy of the signed NPC that meets the electronic filing requirements identified above, and Attachments: the Secretary's most recent Certificate on this project; a plan showing existing conditions and most recent previously-reviewed proposed build condition; a plan showing currently proposed build condition; an original U.S.G.S. map or good quality color copy (8-1/2 x 11 inches or larger) indicating the project location and boundaries; and a list of all agencies and persons to whom the proponent circulated the NPC, in accordance with 301 CMR 11.10(7).

Should the need arise to file an NPC for Phase 2 projects, the supplemental alternatives analysis will be provided project components, and include discussion on future forecasted demand, and the extent the project will improve the safety and efficiency of the airport. Any potential increase in activity will be discussed. The analysis would include a No Build Alternative, and also alternatives for the projects that may avoid or minimize impacts to land alteration and impervious area. Also, the alternatives analysis would include discussion relative a selection of the Preferred Alternative that includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.

MEPA 03 **The FEIR should include plans of existing and proposed conditions at a legible scale that identify all major project components (existing and proposed buildings, access roadways, runways, taxiways, etc.), public areas, impervious areas, subsurface utilities, surface elevations, wetland resource areas, ownership of parcels including easements, and stormwater and utility infrastructure. Conceptual plans should be provided for on-site work as well as any proposed off-site work for transportation or utility improvements that will benefit the project.**

These plans are provided as figures throughout the document as conceptual level only. Design level plans will be developed during the next phase of the funding.

MEPA 04 **The FEIR should clarify whether the project itself is anticipated to, directly or indirectly, result in an increase in Airport operations and associated increase in airplane or jet activity. If so, the FEIR should explain the methodology used to quantify the projected increase in Airport operations.**

The Airport is not seeking to increase airfield capacity nor expand the Airport but rather, meet airfield geometry standards, recommendations for runway length, and address FAA safety and design criteria deficiencies such as runway length, taxiway configurations, and safety area geometry for the current family of aircraft operating at the Airport as stated in Chapter 2 of the Final EIR. As demonstrated by the operational data provided in Chapter 1.0 of the Draft EA/EIR, historical operations were far greater than current and modeled future operations presented. As aircraft, technology, FAA safety and design criteria change, so must the Airport.

MEPA 05 **The FEIR should provide updated air quality, noise, and GHG emissions analyses that account for the forecasted increase in Airport operations.**

Noise, air and GHG analyses presented in the Draft EA/EIR are based on the forecasts in the Airport Master Plan update, which provides numbers of airport/aircraft operations with factors to increase operations for future scenarios. There are not any revised estimates to update. Additional information is presented regarding conclusions and mitigation measures.

MEPA 06 **The FEIR should include all impacts associated with activities asserted to qualify as "Replacement Project" and "Routine Maintenance" work for which no advisory ruling has been issued by the MEPA Office.**

This document does not identify any projects or activities that would be considered a replacement project or routine maintenance.

MEPA 07 **The Proponent should review the requirements in 314 CMR 9.06 and determine whether a practicable alternative is available that has less adverse impact to the aquatic ecosystem.**

Chapter 2, Alternatives Analysis, identifies additional alternatives for Taxiway D that avoid and minimize impacts to aquatic resource areas. No other projects proposed have any direct or indirect impact on Waters of the US. Compliance with 314 CMR 9.06 and 9.07 is addressed in Section 5.3.

MEPA 08 **Specifically, the alternatives analysis should include a thorough analysis to demonstrate why the separation distance (taxiway centerline to runway centerline) cannot be reduced from the recommended 400 feet for TWY D to decrease wetland impacts.**

Section 2.1.1 discusses reducing the separation distance from taxiway centerline to runway centerline to 300 feet, and this alternative is rejected, because it does not comply with FAA safety standards, which are paramount over decreasing the wetland impacts.

MEPA 09 **The FEIR should identify the distance between Runway 15-33 and TWY D at which there would be no impacts to BVW, LUW and Bank. It should also review an alternative that minimizes impacts to wetland resource areas and identify the separation distance from Runway 15-33.**

Figure 2.1-1 shows an alternative (Alternative 4) of proposed Taxiway D circumnavigating Upper Gate Pond without impacting BVW, LUW and Bank. The "shifted" alternative layout is based on conceptual design stage.

In this alternative, the taxiway is shifted closer to the runway by approximately 100 feet, thereby providing a Runway Centerline to Taxiway Centerline separation distance of 300 feet, versus the required FAA centerline separation distance of 400 feet. Section 2.1-1 in the narrative explains why this alternative is not feasible, precisely because of FAA safety standards. The FAA would not allow HYA to build a new parallel taxiway that does not meet standard runway/taxiway centerline separation distance of 400 feet.

Figure 2.1-2 identifies a modification to the preferred alternative (Alternative 5) which reduces BVW impacts by over 50%. In this alternative, the same alignment and runway to taxiway separation distance of 400 feet is maintained, along with a 2:1 side slope in the vicinity of Upper Gate Pond. The area to the north of the taxiway which consists of the 25-foot wide Taxiway Safety Area (TSA) and the 12 foot-wide perimeter vehicular service road has been narrowed to just include the TSA \ The service road will terminate east of Upper Gate Pond and vehicular access to this portion of the airfield will be either via Airport Road to the north of the project area or via Taxiway D. See discussion in Section 2.1-2.

MEPA 10 **In the event impacts to wetlands cannot be justifiably avoided, the FEIR should propose appropriate mitigation measures to demonstrate consistency with the WQC regulations. It should identify the location of any proposed wetland replication.**

Section 5.1.2 discusses wetland replication in mitigate direct impacts to Airport wetlands. Figure 5.1-1 identifies the replication area location adjacent to the Taxiway D impact area. Consistency with the WQC regulations is discussed in Section 5.3

MEPA 11 **The FEIR should include additional alternatives analysis for project components not discussed in the DEIR, including the hangar development in the North and East Ramps and other Phase 2 projects that were excluded from the DEIR. To the extent the Airport wishes to defer review of Phase 2 components, a procedure for review through the filing of NPCs should be proposed in the FEIR.**

Section 2.2 discusses the alternative analysis for the North and East Ramp Hangar Development. Section 2.3 addresses the Runway Safety Area improvements needed for the 6-end of Runway 6-24. Section 2.4 addressed the terminal expansion alternatives. This alternative analysis was included as an appendix to the Draft EA/EIR as well.

See MEPA 02 above for a discussion on the proposed procedure through the filing of NPCs.

MEPA 12 **The supplemental alternatives analysis should justify the need for hangar development, whether it is supported by current or future forecasted demand, and whether this increase in capacity will induce more demand for airplane and vehicular travel. The analysis should include a No Build Alternative, and also identify any alternative configurations or locations for proposed hangars and other development at the North and East Ramps that would avoid or minimize impacts to land alteration and impervious area. The alternatives analysis and project narrative should support the selection of the Preferred Alternative that includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.**

Hangar development may occur at any time depending on interested leasing parties. These projects were previously described in Draft EA/EIR Section 3.1.5. The forecast table includes changes in operations based on based aircraft (i.e., "Local") that would be housed in hangars. "Expansion in capacity" would refer to the capacity of the airport to "house" aircraft on site, whether in hangars or tie down spaces. In Appendix B of the Draft EA/EIR which includes Chapters 4-6 of the Master Plan, Chapter 5, Section 5.5.1 provides a detailed analysis of hangar demand for the Airport.

MEPA 13 **The FEIR, or a summary thereof, should be distributed to the EJ Reference List that was used to provide notice of the DEIR. The Proponent should obtain a revised EJ Reference List from the MEPA Office to ensure that contact information is updated. The same efforts to notice the project should be made prior to the submission of the FEIR.**

An updated EJ Reference List was requested from MEPA office on 5/6/2024; After receiving the EJ Reference List, the project proponent created a project-specific EJ Distribution List, which was ultimately combined into a project specific stakeholder list of every citizen, organization, and agency that has been involved in the project, whether due to geographic location, due to regulations saying certain agencies are involved, or due to being involved in the public comment period. The project was noticed on **August 21, 2024** in the following ways.

- Email to EJ Reference List and Airport-maintained Stakeholder List
- Posted on Airport's website (www.flyhya.com/airport-info/environmental-assessment)

MEPA 14 **The FEIR should provide an update on any outreach conducted since the filing of the DEIR, and identify any changes made to the project design in response to this outreach.**

To engage with the public further in 2024, the project proponent has been hosting open houses to talk about the Master Plan projects with local groups, such as the Yarmouth Camp. The project proponent has also completed a project presentation on the Master Plan projects at the Yarmouth Rotary Club in July 2024. During the month of July 2024, the project proponent has also met with Congressman Keating; Congressman Keating agreed to not move the Airport to join Joint Base Cape Cod.

The Airport held its 5th and final public meeting on August 27, 2024, in person (6-8pm) and virtually (2 to 4pm). The meeting directly addressed the public/agency comments from the Draft EA/EIR and allowed for questions from the public after each explanation was given. The meeting was held at two different times during the day to accommodate participation in both a virtual and in-person format. The virtual meeting was held via zoom from 2 to 4 pm. And an in-person meeting was held from 6 to 8 pm at Barnstable Town Hall. The meeting provided the community with an opportunity to learn about environmental analysis completed and information documented in the Final EIR. Several officials from the Federal Aviation Administration (FAA) and the Massachusetts Department of Transportation (MassDOT)Aeronautics Division also were in attendance to address questions from the community. The airport engaged communication specialists from HSH to moderate the meeting. The meeting participants, and community members, were able to submit questions and comments in written form both in advance and during the meetings.

MEPA 15 **The FEIR should respond to comments from the Sierra Club regarding unfair and inequitable burdens on EJ communities in the vicinity of the Airport, particularly as related to ongoing cleanup of PFAS contamination in the surrounding community.**

The Sierra Club states in its comment letter the following:

"The DEIR does not acknowledge or in any way mitigate historical and continuing unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport. In particular, decades of handling and use of aqueous film-forming firefighting foams (AFFF) at and around the Airport resulted in inadvertent but extensive PFAS contamination of public water supply wells and exposed Hyannis residents, students, workers, and visitors to significant but unknown amounts of hazardous but unknown chemical mixtures for significant but unknown time periods with potentially significant but unknown health consequences. PFAS-contaminated soil and the associated plumes flowing onto and emanating from Airport property continue to pose risks."

The comment from the Sierra Club states there are unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport. However, the comment does not provide evidence of the burdens that it cites.

We respectfully recommend that the commenter visit the Airport's webpage on PFAS here https://flyhya.com/airport-info/pfas/ to learn about the comprehensive efforts of the airport to address PFAS. Furthermore, we note the following efforts of the airport specifically as they relate to PFAS.

- 2015: HYA ceased use of AFFF in 2015 for tri-annual exercises and annual testing.

- 2016: Cape Cod Gateway Airport (HYA) was the first airport in Massachusetts to purchase an ecologic unit to test AFFF consistency to meet annual FAA testing requirements without the need to deploy AFFF on the ground for testing. HYA bought this unit before it was approved by FAA as an alternative testing platform to be as proactive as possible.

- 2016: Cape Cod Gateway Airport successfully recovered AFFF used in a 2016 aircraft accident response. All 10 gallons of AFFF concentrate applied at the accident site was captured in an enclosed concrete catch basin, vacuumed out and appropriately disposed of off-site.

- 2016: Cape Cod Gateway Airport (HYA) initiated the process of reporting and analysis following requirements outlined in Massachusetts General Law, and the Massachusetts Contingency Plan (MCP).

Additionally, the Airport continues to coordinate with MassDEP and the Town of Barnstable as they complete ongoing investigations into the impacts of PFAS on soil and groundwater. The purpose of the Airport's efforts is to continue reporting, testing, mitigation, and monitoring as necessary to meet MassDEP Bureau of Waste Site Cleanup reporting requirements. Please note that this is a long process, and multiple reports are required to meet MCP requirements. The reports from 2016 to 2024 can be found here: https://flyhya.com/airport-info/pfas/

Lastly, we note that the Airport has conducted extensive public outreach and has provided public information relative to PFAS and the actions the airport has taken. The Airport has met with the community on multiple occasions holding public meetings and open dialogue on the Airport's response to PFAS. Additionally, the public has the opportunity to comment on any of the draft reports submitted to DEP. The public meetings the airport has held on PFAS are as follows:

- July 29, 2019 - Public Involvement Plan (PIP) Presentation held at 6PM in the Airport Terminal Building Conference Room. Presentation link: https://flyhya.com/wp-content/uploads/2023/08/Final-PIP-Presentation-7-29-2019.pdf
- September 13, 2022 - Airport Community Presentation held at 4PM in the Airport Terminal Building Conference Room. Presentation link: https://flyhya.com/wpcontent/uploads/2023/08/FINAL_Presentation_All-Slides.pdf
- August 7, 2023 - Airport Community Presentation held at 6PM in the Barnstable Town Hall, Presentation link: https://flyhya.com/wp-content/uploads/2023/08/FINAL_PFAS-Public-Meeting.pdf
- December 18, 2023 - Airport Community Presentation/Public Involvement Plan (PIP) Meeting at 6PM in Cape Cod Gateway Airport Conference Room, Presentation link: https://flyhya.com/wp-content/uploads/2023/12/PIP-PFAS-Presentation-FINAL.pdf
- Meeting - Video on Demand: https://streaming85.townofbarnstable.us/CablecastPublicSite/show/10876?channel=1
- November 2024 - Date TBD - Airport Community Presentation - update on results of ongoing monitoring

MEPA 16 **The FEIR should clearly explain why an increase in infrastructure capacity, including hangar space, runway and taxiway extensions, and terminal expansion, should not be presumed to induce additional demand for airport operations, and should cite academic literature or other sources to support this explanation.**

The Airport is not looking for an "expansion in capacity" to accommodate what it thinks will come if the proposed projects are completed. The Airport is looking to meet the needs of existing users to build the airport to safely accommodate them.

For example, the improvements identified in the Master Plan refers to those improvements which are necessary for all operators and types of activity, not just improvements that would serve one segment of the airport, e.g., air carrier activity. Of the 3,300 public use airports, 383 are air carrier airports.

Furthermore, Hangar development may occur at any time depending on interested leasing parties. The forecast table includes changes in operations based on based aircraft (i.e., "Local") that would be housed in hangars. "Expansion in capacity" would refer to the capacity of the airport to "house" aircraft on site, whether in hangars or tie down spaces. In Appendix B of the Draft EA/EIR which includes Chapters 4-6 of the Master Plan, Chapter 5, Section 5.5.1 provides a detailed analysis of hangar demand for the Airport.

MEPA 17 **The FEIR should present revised estimates of noise, traffic, and air quality/mobile source that include certain assumed increases from No Build-to-Build conditions as a result of the project components that are described as capacity expansions to support growth. Based on this assumed increase, the FEIR should update all conclusions relative to the extent of increased impacts and detail the extent to which each category impact is likely to impact surrounding EJ populations.**

Noise, air, and traffic analyses presented in the Draft EA/EIR are based on the forecasts in the Airport Master Plan update, which provides numbers of airport/aircraft operations with factors to increase operations for future scenarios. There are not any revised estimates to update. Additional information is presented regarding conclusions and mitigation measures.

MEPA 18 **The FEIR should consider additional mitigation measures to address noise and air quality impacts, including strong measures to support future electrification of aircraft and use of sustainable aviation fuels (SAFs) and noise abatement measures such as those suggested by the Town of Yarmouth.**

Please refer to Section 4.5 for a discussion on mitigation measures for noise and air quality impacts.

MEPA 19 **The FEIR should consider whether real-time data related to noise and air monitoring could be made available to the surrounding communities for added transparency.**

This document considers the use of real-time noise and air monitoring in Section 4.5. FAA cites several reasons that real-time noise modeling is not used by FAA in its analyses including difficulty processing data, costs, and accuracy. Therefore, FAA only uses noise modeling to generate detailed noise results over large areas as the only practical way to accurately and reliably determine geospatial noise effects in the surrounding community when analyzing proposals related to aviation noise.

The airport will investigate the use of MassDEP grants to obtain air monitoring hardware associated with the Town of Barnstable.

MEPA 20 **The FEIR should provide information regarding a Scope of Work to review potential modifications to Airport departure procedures including coordination with residents and EJ populations.**

The Airport has developed a scope with its consultants to review departure procedures. Due to the timeline of this effort, it is not currently available to be provided as part of the FEIR/EA. The effort to review airport departure procedures includes airport users, management, as well as stakeholders from airport neighborhood groups.

MEPA 21 **The FEIR should update analyses related to air emissions and noise to account for the increase in airplane activity that is anticipated from the proposed hangar expansion or other work that may result in an increase in Airport capacity.**

Noise and air emissions presented in the Draft EA/EIR are based on the forecasts in the Airport Master Plan update, which provides numbers of airport/aircraft operations with factors to increase operations for future scenarios. These growth factors are based on national and regional aviation trends and estimates. There are no further updates to the analyses.

MEPA 22 **The FEIR should provide all the information requested in the EPA comment letter as to anticipated impacts to groundwater and the SSA, including from stormwater, associated with the project.**

EPA's comments and questions are addressed in Chapter 3: Groundwater and Sole Source Aquifer and below in response to EPA comments.

MEPA 23 **The FEIR should assess whether any increase in pollutant loading in groundwater is anticipated to impact the identified EJ Population based on the results of groundwater modeling or other analysis.**

The Maher Wells groundwater treatment system operated by the Town of Barnstable is providing treated drinking water to the community eliminating the risk associated with ingestion of drinking water containing PFAS above the MassDEP regulatory limits. Based on environmental forensics and fate and transport mechanisms documented in the Updated Phase II Report and Final Phase IV Report, the Airport's PFAS plume impacted the Maher Wells (ME-2 only) after the Town of Barnstable installed a treatment system designed to treat for PFAS (see **Appendix C**, p.26)

MEPA 24 **The FEIR should include a plan showing groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the project. The plan should detail the location of existing and proposed monitoring wells, public and private water supply wells, and surface water supply sources within five miles of the Project. The plan should be accompanied by a narrative to explain how groundwater contours were developed.**

Section 3.1 includes a discussion of groundwater depth, contours, and flow directions and the methodology for determining each. **Figure 3.1-1** provides the monitoring well locations. **Figure 3.1-2** identifies groundwater levels and direction of flow. **Figure 3.1-3** provides the location of public and private groundwater supply wells and protection areas within five miles of the airport. **Figure 3.4-1** details the Town of Barnstable Groundwater Protection Districts on and near the Airport.

MEPA 25 **The FEIR should provide additional hydrogeologic information as it relates to the flow of potential contaminants from the project, including from increased wastewater flows, stormwater discharges, and construction activities, and the potential impact, including groundwater flow continuing off-site, to existing or proposed public or private water supplies. Distances and time of travel (if times are readily available) to nearest water supplies should also be provided.**

Section 3.1 addresses the time of groundwater travel, and Section 3.2 address additional hydrogeologic information regarding soil types and the lack of surface water interactions with groundwater.

MEPA 26 **The FEIR should include a list describing the expected annual loading of potential contaminants of groundwater (as compared to baseline conditions at the Airport) from construction and project-related operations including information on fuel-related contaminants and loadings such as volatile organic compounds, metals, and polyaromatic hydrocarbons. It should provide a description of any past contamination events at the airport along with baseline groundwater contaminant conditions. It should also include an expanded description of measures and best management practices to reduce the release of contaminants and provide aquifer protection during construction and airport operations, with a specific focus on how the Airport will protect groundwater from contaminated runoff, spills, or accidents at the airport.**

A description of past contamination events was provided in Section 5.17 of the Draft EA/EIR. Section 3.2 includes a detailed discussion of measures and best management practices during and post construction to protect ground and surface water. The stormwater management systems will be designed to comply with all current MassDEP stormwater standards for groundwater and surface water protection.

MEPA 27 **The FEIR should include a monitoring plan that describes how and when soil and groundwater will be monitored for potential contaminants of concern and how baseline soil and groundwater contaminant conditions will be established. The monitoring plan should detail the frequency of sampling and how the sampling results, along with needed and executed response actions, will be shared with appropriate water department officials in the project area.**

Cape Cod Gateway Airport already has multiple groundwater monitoring programs. Groundwater monitoring is conducted bi-annually to make sure soil caps on the Airport's PFAS plume are working properly so no PFAS has leached into the groundwater. The sampling at certain wells happens in May and November. Secondly, monitoring occurs in compliance with the Airport's NPDES Multi-Sector General Permit. See Section 3.5 for more detailed information. These programs will be updated as may be necessary as Projects are designed and constructed.

MEPA 28 **The FEIR should further clarify how the project is designed to avoid and minimize land alteration and impervious area. It should provide a comprehensive evaluation of all measures to preserve open space and tree cover, to reduce the amount of land alteration, and to convert impervious areas to pervious materials, including reductions in pavement associated with runways and taxiways, reductions in size of aprons and hangars, and supplemental landscaping or tree planting to mitigate impacts associated with clearing.**

The Airport examined multiple different alternatives for the Master Plan projects, which are discussed in Chapter 2.

The Airport is participating in the Greening Hyannis initiative, which will plant trees in and around environmental justice communities in Hyannis. The initiative is looking to provide cleaner air for historical underprivileged communities. The Airport wants to support this initiative while also offsetting some of the tree clearing that will occur through the completion of the Master Projects.

The Airport will also be planting trees in two selected open areas around the property that will not cause any flight obstructions. The first of which is an undeveloped plot of land that is to the southwest of the end of Runway 15, along Airport Road (facing the non-airport side of the road). On the plot of land to the south, there is a detention pond that nothing will be able to be planted or built around, but to the north of the detention pond, the Proponent proposes adding the trees along a potential paved path through this area, which could serve as a walking path for citizens or customers of the surrounding businesses.

The second location of tree planting is along Barnstable Road, starting from the Capetown Plaza Shopping Mall (WS Development) and continuing south and east along Barnstable Road. Capetown Plaza Shopping Mall is owned by Cape Cod Gateway Airport. Tree and shrubbery plantings near the Shopping Center and along Barnstable Road on both sides the roadway would allow this area to be more aesthetically pleasing and aid in the fight against climate change. Please see **Figure 6.2-1** for these tree planting locations.

MEPA 29 **The FEIR should confirm the amount of open space that will remain undisturbed and/or restored upon completion of construction. It should include site plans that clearly locate and delineate areas proposed for development and those to be left undisturbed.**

Figure 1.3-1 and Section 1.3 discusses the impacted areas on Airport. Any areas that are temporarily altered for construction of runway or taxiway projects will be restored to vegetated areas (grass or shrub) as discussed.

MEPA 30 **The FEIR should indicate whether a CR could be considered for non-development areas of the airport, and how non-development commitments will be enforced.**

A CR restriction on airport land was considered as part of the Final EIR to offset development and/or vegetation removal as part of the proposed Projects.

A conservation restriction is a legally enforceable agreement whose purpose is to ensure permanent protection of specific conservation values while permitting limited land uses consistent with the protection of said conservation values. Different from term-limited restrictions, conservation restrictions, as defined in Sections 31-33 of Chapter 184 of the Massachusetts General Laws, are permanent restrictions that require the approval "in the public interest" of the Secretary of Energy and Environmental Affairs. The Division of Conservation Services (DCS) manages all reviews for CRs that will be held by charitable corporations/trusts, or municipalities.

Ultimately, the use of a conservation restriction on airport plan was not selected as mitigation. However, it is important to note that large land areas owned by the airport are already protected given the airport's existing mission and need to maintain open areas of space for the purpose of preventing hazards to air travel (for the flying public). As noted within the Final EIR, per FAA and MassDOT Aeronautics regulations, the airport is required to keep areas of the airport as open space by maintaining these areas free of obstruction, whether they be a manmade structure (building) or vegetative obstruction (tree). In cases where trees are limited in height due to the airspace regulations, these areas still allow for lower-growing vegetation such as shrubs, small trees, and grasses – providing the same or greater benefit if the trees were allowed to grow to maturity. These requirements result in the airport maintaining areas of open spaces.

Furthermore, placing a CR on airport land may prevent the citizens of the Town of Barnstable of land-use options that they may seek in the future. These areas, if placed in a CR would be restrictive to opportunities to use public lands in a manner consistent with both the Airport's mission and the future vision of the town.

For these reasons listed above, the Airport has committed to addressing land impacts by using the minimum width necessary for taxiways and runways and phasing projects as discussed in Section 1.3.

MEPA 31 **As the design for runway and taxiway modifications is finalized, the Proponent should identify any new areas where vegetated buffers can be maintained or re-established to protect nearby surface waters and incorporate these locations in landscaping and maintenance plans.**

The slope of Taxiway D and the Taxiway Safety Area will remain vegetated and provide a buffer to Upper Gate Pond. The safety area will remain grassed. To the extent feasible, the slope will be planted with native shrubs and herbaceous plants that can be maintained at a height in accordance with FAA regulations.

MEPA 32 **The DEIR includes a high-level review of stormwater for several, not all, project components. The FEIR should provide a copy of the Stormwater Report for the project which identifies all measures that will be employed to protect the water quality of the SSA, describes the proposed stormwater management system for each project/phase, and identifies BMPs that will be incorporated into its design. It should describe how the proposed stormwater management system will fully comply with the SMS. The FEIR should provide details on the size, location, and design of proposed stormwater systems.**

Given the funding required for the three major projects (Taxiway B, Taxiway D, Runway 15 Extension) of approximately $60 Million and the likely resultant staggering of project implementation, the Airport intends to secure local, state, regional and federal permits by individual project as may be required. Neither stormwater calculations nor a Stormwater Report were included in this MEPA/NEPA planning phase project, both of which will be produced under the next funding phase of permitting and design. That said, all reasonable measures will be employed in future designs to protect the water quality of the SSA. Submissions under MEPA Notice of Project Changes associated with future permitting projects will describe the proposed stormwater management system for each project/phase and identify BMPs incorporated into the design. It will also describe how the proposed stormwater management system will fully comply with current water quality standards. Design submissions associated with future permitting projects will provide details on the size, location, and design of proposed stormwater systems which will endeavor to exceed stormwater management standards by incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable.

MEPA 33 **The Airport should take all feasible measures to manage stormwater runoff, including by exceeding stormwater management standards and incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable; such measures should be described in the FEIR. Green infrastructure is an effective way to treat stormwater generated by impervious surfaces and provides cooling and other benefits for the community and should be incorporated to the maximum extent possible. LID designs should be carefully considered, and where not used, the FEIR should provide a thoughtful explanation as to why they are infeasible for implementation on-site. LID designs should be carefully considered, and where not used, the FEIR should provide a thoughtful explanation as to why they are infeasible for implementation on-site.**

To the maximum extent feasible, green infrastructure measures will be incorporated to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where not used, the stormwater report and permit application will provide a thoughtful explanation as to why they are infeasible for implementation on-site. The Airport has done an exemplary job of monitoring stormwater and maintaining its current system in a state of good repair, and it will continue to commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.

Please see Sections 5.2.3 and 5.2.4 for a discussion on proposed Stormwater Control Measures and LID measures, respectively.

MEPA 34 **The FEIR should commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.**

An operation and maintenance plan for both construction and post-development stormwater controls will be developed. The plan will align with and improve the successful O&M plan in place at the Airport (see **Appendix E** for the Industrial SWPPP) and will include the parties responsible for operation and maintenance at different phases of the project and afterwards with a schedule for inspection and maintenance, including routine and non-routine maintenance tasks.

MEPA 35 **As described further below, the FEIR should discuss how the stormwater management system will be designed to accommodate larger storm events. The FEIR should consult the rainfall volumes that are provided by the MA Resilience Design Tool as indicative of future climate conditions and describe how the project will consider future conditions in design. It should include a plan showing the location of BMPs and describe whether sufficient space is being provided to allow for future retrofits as needed to accommodate large storms.**

The Projects will be designed to include stormwater management systems able to accommodate future storms. In future funding phases, identified starting in FY 2025, contingent upon on completion of this environmental planning review phase, stormwater management systems will be designed to comply with state SMS and investigate the feasibility to accommodate future storm conditions within the overall system to be construction as the Airport redevelops existing infrastructure. See Section 5.2.

MEPA 36 **The FEIR should describe the precipitation data used for the design of the stormwater management system and clearly discuss how it will be sized to address future climate conditions.**

The future design of the stormwater management system will utilize revised rainfall intensities by NOAA Atlas 14, Point Precipitation Frequency Estimates including for future climate conditions or other data sources as may be required by the current MassDEP Stormwater Management Standards at the time. MassDEP is proposing to require that precipitation amounts be 90% of the upper end of the range of historical precipitation. This is called “NOAA 14 PLUS” and is proposed to ensure that stormwater from most (80%) storms will be adequately managed. This somewhat increased precipitation is based on actual events.

MEPA 37 **The FEIR should discuss whether the proposed stormwater design is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1 inches) from the Tool for the runway extension and taxiways. It should also discuss the 2070 100-year return period volume for aviation hangars and buildings (24-hour rainfall volume of 11.0 inches). Estimates can be provided in lieu of exact calculations, to the extent stormwater design is not advanced enough by the time of the FEIR.**

The proposed stormwater design for each project is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1 inches) from the Resilient Massachusetts Action Team (RMAT) Tool for the runway extension and taxiways.

To the maximum extent feasible, green infrastructure measures will be incorporated to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where not used, the stormwater report and permit application will provide a thoughtful explanation as to why they are infeasible for implementation on-site. The Airport has done an exemplary job of monitoring stormwater and maintaining its current system in a state of good repair, and it will continue to commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.

MEPA 38 **To the extent the project is unable to accommodate future year storm scenarios, the FEIR should discuss whether the project has engaged in flexible adaptative strategies, and whether current designs allow for future upgrades to be made to adapt to climate change.**

In order to mitigate the future 2070 50-year storm event and the 2070 100-year storm volume for aviation hangars and buildings, all SCMs will need to be expanded by approximately 55-60%. The new subsurface infiltration and detention systems would be constructed from chambers which are modular in nature and can be added onto existing systems in the future.

Private developers will implement future hangar development. The Airport will implement construction requirements that assure that applicable stormwater management systems for all future hangar and building development will be designed pursuant to the 2070 100-year return period volume (24-hour rainfall volume of 11.0 inches).

MEPA 39 **The FEIR should identify all proposed new buildings, expansions, or additions, including hangars that may be developed in the 20-year timeframe and discuss GHG commitments for these components. The Proponent should consult with the MEPA Office regarding the requirement to prepare separate GHG analyses for future new buildings, expansions, or additions, including the SRE.**

For any new buildings, expansions, or additions discussed in this document, the Proponent will commit:

- High performing envelope that complies with the 2023 Stretch Code envelope performance requirements;
- 100% heat pump space heating;
- Energy recovery ventilation per the 2023 Stretch Code update;
- Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed;
- Roof to be constructed PV-ready;
- Installed electric vehicle (EV) charging spaces, quantity to be determined; and
- EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.

MEPA 40 **The DEIR notes eight EV charging stations will be installed. The FEIR should commit to providing designated parking spaces for these vehicles.**

All eight EV charging stations are to be constructed in designated parking/recharging areas within parking lots. Exact locations are to be determined and identified during the design stages of the Airport's Microgrid project underway. Spaces will be convenient to key areas of the airport (e.g., terminal, hangar areas, and facilities).

The Airport will determine the potential demand for Electric Vehicle Supply Equipment (EVSE) based on industry best practices and information by the Cape Cod Commission Electric Vehicle Charging Station Siting Analysis Tool. The following best practices for EVSE implementation will be considered in the design/planning phase:

- Level 2 EVSE or higher considered for most land uses. Level 1 EVSE may be appropriate in limited applications;
- Connectors to allow for use by a variety of vehicle makes; and
- Appropriate signage and pavement markings.

- Signage that details the ESVE voltage and amperage levels, safety information, contact information for reporting when the equipment is not operating or other problems, and, as applicable, any use limitation on use (i.e., patrons only), hour of operations, time limits, and usage fees;
- All EVSE placed and proposed shall be compliant with the Americans with Disabilities Act and with applicable Massachusetts Architectural Access Board rules and regulations; and
- Where EVSE is provided or proposed within an adjacent pedestrian circulation area, such as a sidewalk or accessible route to the building entrance, the charging equipment must be located so as to not interfere with accessibility requirements.

The proposed EVSE at the Airport is an important component to support the developing EV charging network on Cape Cod. The Airport plays a role in the development of this network as part of a cooperative, coordinated approach with both public and private partners. The project will contribute to the build out of a regional EV charging network including public access to and availability of EVSE. Certain allocation of the charging infrastructure proposed may be prioritized/restricted to residents, employees, patrons, or other particular site users.

MEPA 41 **The FEIR should provide an update regarding implementation of electric aircraft charging stations and implementation of conduits to facilitate future stations. It should provide a clear timeline for planning and construction of the microgrid infrastructure. It should include strong measures to facilitate a transition to electrification of airplanes and use of SAFs. For instance, the FEIR should consider whether conduits can be installed to facilitate electric charging stations for aircrafts. Any new infrastructure such as hangar spaces should be fully equipped with electric wiring and solar PV where feasible. The FEIR should describe how many aircraft charging stations will be proposed.**

The exact areas for electric aircraft charging are unknown at this time and will be further investigated as part of the Airport's Microgrid project funded by the U.S. DOE Smart Grid funding program. The number of chargers would be anticipated to grow as the aviation industry adopts this type of technology for its aircraft fleet.

MEPA 42 **The FEIR should describe efforts to minimize tree and shrub clearing and land disturbance to the extent practicable and mitigate impacts when unavoidable.**

The areas affected by the construction will be returned to their original or improved condition. Adequate protection will be in place throughout the construction process to prevent the discharge of silt and erosion caused by air movement and water. All areas cleared of natural cover, but not improved, will be replanted with permanent vegetation. See Section 5.2.7 for a discussion of construction period stormwater management, including site stabilization.

MEPA 43 **The FEIR should clearly explain the Proponent's plan for disposition of the trees cleared through the project, including the process for identifying potential markets for reuse of wood. The Proponent should commit to reuse of cleared trees for long-lived wood products to the greatest extent practicable and should indicate how the ultimate disposition of the trees will be tracked and documented.**

Wood chips from felled trees associated with the Proposed Action will be utilized on site to minimize and mitigate the release/creation of GHGs. Wood chips from the trees removed related to the Project will be stockpiled on site, and utilized within areas of the airport where covering soil with wood mulch can reduce maintenance needs (e.g. along fence lines, within stormwater areas, landscaped areas, and on pathways) or provide temporary soil stabilization during construction– which will help reduce greenhouse gas emissions.

By retaining woodchips on site, greenhouse gases are avoided by eliminating the need to transport materials off site (minimization of truck trips) and also the avoidance of disposal and disposal related vehicle emission reductions.

Environmental benefits from the use of wood chips on site, the anticipated benefits include saving water, improving soil, combatting pests, and stopping weeds, wood mulch actually reduces the release of greenhouse gases.

MEPA 44 **The use of CRs should be considered to ensure permanent protection of non-development areas.**

See response to MEPA #30

MEPA 45 **The FEIR should describe the proposed location of tree planting and the number of trees onsite or off-site in the Town of Barnstable.**

The project proposes tree planting as part of landscaping plan and/or stormwater LID plan. Trees and other vegetation store carbon within their structures and will continue to absorb and store carbon as long as they are alive. tree planting, and plantings with other native vegetation can contribute to carbon sequestration.

Revegetation, restoration, and/or site landscaping with native tree, shrub, and grass species is proposed due to the multiple benefits that derive from maintaining and restoring native habitats (e.g., ecosystem services such as filtering of air and water pollutants, provision of habitats for wildlife and native pollinators, and the aesthetic benefits of naturally vegetated lands).

Tree replanting will be undertaken as shown in the areas shown on **Figure 6.2-1** due to trees being especially good at sequestering carbon due to their size. Tree planting proposed within areas that are suitable and appropriate to the airport environment. Additionally, the Proponent will engage with local organizations to study planting trees offsite. The Proponent has been in communication with Greening Hyannis and the Town of Barnstable to cooperate with their efforts to plant trees in Environmental Justice communities; these plantings will provide the dual benefit of both carbon sequestration and reduction of 'hot spots' through the lessening of the heat island effect in EJ areas. Restoration with native plant materials will follow the Cape Cod Commission's *Wildlife and Plant Habitat Technical Bulletin Objective WPH2 Methods*.

MEPA 46 **The FEIR should explore additional ways to directly mitigate the GHG emissions of land clearing, including through tree replanting efforts, reuse of felled wood, and CRs placed on conservation areas within EJ communities.**

Wood chips from felled trees associated with the Proposed Action will be utilized on site to minimize and mitigate the release/creation of GHGs. Wood chips from the trees removed related to the Project will be stockpiled on site, and utilized within areas of the airport where covering soil with wood mulch can reduce maintenance needs (e.g., along fence lines, within stormwater aeras, landscaped areas, and on pathways) – which will help reduce greenhouse gas emissions. By retaining woodchips on site, carbon releases are avoided by eliminating the need to transport materials off site (minimization of truck trips), reducing the need for the acquisition of chips produced elsewhere and also the avoidance of disposal and disposal related vehicle emission reductions.

Within the context of environmental benefits from the use of wood chips on site, the anticipated benefits include saving water, improving soil, combatting pests, and stopping weeds, wood mulch actually reduces the release of a greenhouse gas.

The Airport will also utilize, to the extent feasible, wood chips from tree removal in existing and proposed stormwater control measures (e.g., bioretention, swales and basins). In stormwater applications, wood chips can be utilized as a

mulch to provide beneficial functions such as the following: decompose slowly; slowly release nutrients; effectively retain and slowly release moisture; moderate temperature; provide weed control; are sustainable; resist compaction; create a diverse environment for soil biota by increasing soil organic carbon; and may sequester some pollutants.[1]

MEPA 47 **The FEIR should provide a list of chemicals used at the Airport, and a description of where and how they will be stored and managed on airport property. The list should be accompanied by a discussion of aircraft or vehicle maintenance practices/activities that can pollute runoff along with measures that will be implemented to reduce and control pollutants.**

Section 7.1 provides a summary of the list of chemicals and OHM used by the Airport. Section 3.1 provides information on airport activities that are implemented to reduce and control pollutants including the Spill Prevention and Pollution Control Plan (SPCCC), Industrial Stormwater Pollution Prevention Plan (SWPPP), an aircraft washing and deicing measures.

MEPA 48 **MassDEP comments reiterate that one or more RAM Plans or possibly a modified Phase IV Remedy Implementation Plan may be necessary for the various construction activities proposed in the DEIR. The FEIR should describe how the project will comply with all applicable requirements.**

Should MassDEP deem a RAM Plan or a modified Phase IV Remedy Implementation Plan necessary for construction activities, the Airport will develop said documents prior to construction.

MEPA 49 **The FEIR should confirm if a RAM Plan will be required under 310 CMR 40.0000 for any project activities based on review of proposed projects by a Licensed Site Professional (LSP). The Proponent and LSP should evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347. The Proponent and the LSP should work together to ensure that future RAMs for the airport construction activities do not exacerbate contamination. In particular, it should be demonstrated that any excavation of, or introduction of, soil beneath the caps will not exacerbate groundwater contamination.**

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[1] Minnesota Stormwater Manual, *Wood chips and applications of wood chips in stormwater* www.stormwater.pca.state.mn.us

To clarify, no disturbance of the caps is proposed as part of any project. Protective construction measures will be implemented to protect the integrity of the caps. As described in Section x, a soil sampling plan is proposed for each project to ensure that any contaminated soils are identified during the design process such that the Airport engineer and LSP can work together to ensure that the site remains in compliance with the Phase IV Inspection and Completion report submitted to MassDEP in April 2024 (see **Appendix C**).

MEPA 50 **The Proponent should work with MassDEP to resolve any issues regarding PFAS before conducting any work for the project. The FEIR should provide a detailed response to comments from the Association to Preserve Cape Cod and the Sierra Club regarding PFAS contamination and further response actions.**

Please see Section 7.6 on information regarding PFAS Contamination and Mitigation at Cape Cod Gateway Airport. Response to comments from APCC and the Sierra Club are provided herein. **Appendix C** contains the Phase IV and V reports submitted to MassDEP in April 2024.

MEPA 51 **The FEIR should identify if the Proponent qualifies as a generator of hazardous waste and/or waste oil.**

The Proponent, Cape Cod Gateway Airport is a "generator" of hazardous waste and/or waste oil. Please refer to Section 7.1.1 for more information on the Proponent's "generator" status under federal and state law.

MEPA 52 **The FEIR should include a commitment to provide a GHG self-certification to the MEPA Office upon expansion of the terminal building signed by an appropriate professional indicating that all of the GHG mitigation measures, or equivalent measures that are designed to collectively achieve identified reductions in stationary source GHG emission and transportation-related measures, have been incorporated into the project. If equivalent measures are adopted, the project is encouraged to commit to achieving the same level of GHG emissions (i.e., "carbon footprint") identified in the Preferred Alternative expressed as a volumetric measure (tpy) in addition to a percentage GHG reduction from Base Case.**

The Airport commits to providing a GHG self-certification to the MEPA Office upon expansion of the terminal building that is prepared and signed by an appropriate professional indicating that all of the GHG mitigation measures, or equivalent measures that are designed to collectively achieve identified reductions in stationary source GHG emission and transportation-related measures, have been incorporated.

To the extent that equivalent measures for GHG mitigation measures are adopted, the Airport will commit to achieving the same level of GHG emissions identified in the Preferred Alternative expressed as a volumetric measure (tpy) in addition to a percentage GHG reduction from Base Case.

U.S. ENVIRONMENTAL PROTECTION AGENCY-REGION 1

EPA 01 **Barnstable has adopted local regulations which impose stronger restrictions on the five-year "time of travel" area for the aquifer. The Barnstable Groundwater Protection Overlay District is referred to under local zoning as the Wellhead Protection (WP) Overlay District. EPA recommends that the final EA/EIR provide more information about how the Airport plans to meet the restrictions required in the Barnstable WP Overlay District.**

Compliance with the local Groundwater Protection Overlay Districts regulations is discussed in Section 3.4.2. These requirements will be incorporated into the final stormwater management designs for each project as may be necessary or applicable.

EPA 02 **EPA recommends that the groundwater section of the final EA/EIR be expanded to provide additional hydrogeologic information as it relates to the flow of potential contaminants from construction and operation of the proposed project and the potential impact, including groundwater flow continuing off-site, to existing or proposed public or private water supplies. We recommend that distances and time of travel (if times are readily available) to nearest water supplies be provided. We also recommend that the EA describe past and proposed future coordination with public water supply systems regarding drinking water resources.**

Section 3.1 addresses the time of groundwater travel, and Section 3.2 address additional hydrogeologic information regarding soil types and the lack of surface water interactions with groundwater.

EPA 03 **The EA/DEIR should be expanded to fully support any conclusions reached regarding direct or cumulative groundwater impacts to include the following:**

a. A map showing groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the proposed project. Please show the location of existing and proposed monitoring wells and include a narrative to explain how groundwater contours were developed. We recommend that the locations of public and private water supply wells and surface water supply sources within 5 miles of the proposed project be included in the maps;

Section 3.1 includes a discussion of groundwater depth, contours, and flow directions and the methodology for determining each. Figure 3.1-1 provides the monitoring well locations. Figure 3.1-2 identifies groundwater levels and direction of flow. Figure 3.1-3 provides the location of public and private groundwater supply wells and protection areas within five miles of the airport. Figure 3.4-1 details the Town of Barnstable Groundwater Protection Districts on and near the Airport.

b. A list describing the expected annual loading of potential contaminants to groundwater (as compared to baseline conditions at the airport—see below) from construction and project related operations including information on fuel-related contaminants and loadings such as volatile organic compounds, metals, and polyaromatic hydrocarbons;

See section 3.3 for a discussion of Groundwater Protection Measures. These include the airport's SPCC, the SWPPP, and deicing and aircraft washing procedures. Contaminants reaching the groundwater are minimized/prevented by the said documents and associated efforts and actions.

c. A description of baseline groundwater contaminant conditions;

Information pertinent to baseline groundwater contamination can be found in the Airport's Phase I Report and Teir Classification Report, RTN 4-26347 November 2017, available at https://flyhya.com/airport-info/pfas/

d. An expanded description of measures and best management practices to reduce the release of contaminants and provide aquifer protection during construction and airport operations. We specifically recommend additional detail regarding how the airport will protect groundwater from contaminated runoff, spills, or accidents at the airport.

Please refer to Section 3.5 - Construction Period Protection Measures for a discussion of measures to protect groundwater.

EPA 04 **The final EA/EIR should provide a list of chemicals and de-icing products used at the airport, and a description of where and how they will be stored and managed on airport property. A full discussion of aircraft or vehicle maintenance practices/activities that can pollute runoff along with measures that will be implemented to reduce and control pollutants is recommended.**

Section 7.1 provides a summary of the list of chemicals and OHM used by the Airport. Section 3.1 provides information on airport activities that are implemented to reduce and control pollutants including the Spill Prevention and Pollution Control Plan (SPCCC), Industrial Stormwater Pollution Prevention Plan (SWPPP), an aircraft washing and deicing measures.

EPA 05 **The final EA/EIR should include a list of past and current firefighting foam products (which might contain per- and polyfluoroalkyl substances PFAS/PFOA/PFOS) which will be used in association with the proposed.**

No PFAS/PFOA/PFOS containing substances will be used in associated with the proposed project.

EPA 06 **We recommend that the final EA/EIR consider the development of multi-media monitoring as a means of determining the effectiveness of pollution prevention measures aimed at preventing or minimizing the potential for the proposed project to contaminate the aquifer. We request that the final EA/EIR include a monitoring plan that describes how and when soil and groundwater will be monitored for potential contaminants of concern and how baseline soil and groundwater contaminant conditions will be established. We recommend that the monitoring plan detail the frequency of sampling and how the sampling results, along with needed and executed response actions, will be shared with appropriate water department officials in the project area. We recommend annual reporting.**

Cape Cod Gateway Airport already has multiple groundwater and soil monitoring programs. Extensive monitoring results are found in **Appendix C**. Groundwater monitoring is conducted bi-annually to make sure soil caps on the Airport's PFAS plume are working properly so no PFAS has leached into the groundwater. The sampling at certain wells happens in May and November. Results are distributed to local officials and posted on both the Airport's and MassDEP's website. The caps have significantly reduced the concentrations of total PFAS in groundwater in the vicinity of the Deployment Area and ARFF/SRE Area as documented in Section 7.6 and the Phase IV and V Reports provided in **Appendix C**. Secondly, monitoring occurs in compliance with the Airport's NPDES Multi-Sector General Permit. See Section 3.5 for more detailed information. These programs will be updated as may be necessary as Projects are designed and constructed.

EPA 07 **Given the location of the proposed project above a Sole Source Aquifer, EPA recommends that the airport's Spill Prevention, Control and Countermeasure (SPCC) Plan be updated prior to construction to account for all aspects of the proposed project's construction and operations. The current plan (Revision 4) is dated 2020.**

The SPCC plan is updated regularly to reflect any new or changing airport conditions. Revision 5 is currently underway and future revisions are anticipated to be completed prior to construction of Master Plan projects described herein.

EPA 08 **The final EA/EIR should provide additional detail to explain why there is only limited potential for pollutants to be exposed to stormwater.**

Potential pollutants at the Airport are stored within Airport or tenant buildings or within sealed containment structures (i.e., fuel storage tanks) and are not exposed to stormwater as described in Section 7.1. Pollution prevention measures minimize the potential for exposure to stormwater. Future projects will implement similar measures. Projects such as easement acquisition do not involve any concerns over pollutants and stormwater management. See **Appendices D** and **E** for more information.

EPA 09 **EPA recommends that the airport's erosion and sediment control plan, including stormwater runoff controls and Best Management Practices (BMPs) include consideration of groundwater resources at the site, and adjacent public drinking water supply wells. The final EA/EIR should detail any necessary changes to reflect this focus and include a description of monitoring wells and advanced stormwater BMPs needed for spill control. We also recommend that all stormwater BMPs described include a description of pretreatment capabilities as required by Massachusetts stormwater requirements.**

Section 5.2 provides a detailed list of potential BMPs that will be utilized during the stormwater management design process. As the Airport is considered a Critical Area due to the groundwater resources at the site, the stormwater management design will comply with Standard 6 of the MassDEP Stormwater Standards for Critical Areas which is designed to protect these resources.

EPA 10 **EPA requests more information about the proposed BMPs that will be developed for the airport, and regarding the operations and maintenance of the Vortech system. Also, given the location of the proposed project above a Sole Source Aquifer, EPA encourages the use of monitoring wells.**

Section 5.2 provides a detailed list of potential BMPs that will be utilized during the stormwater management design process. **Appendix E (SWPPP)** identifies the operations and maintenance requirements for the Vortech system. The Airport is required to conduct routine facility inspections of all areas of the facility where industrial materials or activities are exposed to stormwater, areas identified in the SWPPP, areas identified as potential sources of pollution, discharge points, and all stormwater control measures, on a quarterly basis, and on **a monthly basis** during the deicing season.

EPA 11 **Any new Underground Injection Control (UIC) wells need to be approved by MassDEP. MassDEP needs a UIC registration application with the required UIC Stormwater Technical Compliance Form, site plans, and cross-sectional plans showing the proposed UIC well structures.**

Upon the completion of the design of the stormwater management system for each project, the Airport engineer will submit a UIC registration application with MassDEP, consistent with its current operating requirements and past practices.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION-SOUTHEAST REGIONAL OFFICE

DEP 01 **Cape Cod Gateway Airport is required to demonstrate the ability to apply extinguishing agent as part of its FAA Part 139 safety certification. The capital improvements to the airport should include provisions to collect the wastewater containing the extinguishing agents generated during these demonstrations and/or training events so that proper treatment and/or disposal can occur in conformance with Massachusetts requirements.**

Please see the Airport's webpage on addressing PFAS here: https://flyhya.com/airport-info/pfas/. We also note that the following measures relative to the capture and collection of any AFFF:

- 2016: Cape Cod Gateway Airport (HYA) was the first airport in Massachusetts to purchase an ecologic unit to test AFFF consistency to meet annual FAA testing requirements without the need to deploy AFFF on the ground for testing. HYA bought this unit before it was approved by FAA as an alternative testing platform to be as proactive as possible.

- 2016: Cape Cod Gateway Airport successfully recovered AFFF used in a 2016 aircraft accident response. All 10 gallons of AFFF concentrate applied at the accident site was captured in an enclosed concrete catch basin, vacuumed out and appropriately disposed of off-site.

- 2016: Cape Cod Gateway Airport (HYA) initiated the process of reporting and analysis following requirements outlined in Massachusetts General Law, and the Massachusetts Contingency Plan (MCP).

Additionally, the Airport continues to coordinate with MassDEP and the Town of Barnstable as they complete ongoing investigations into the impacts of PFAS on soil and groundwater. The purpose of this project is to continue reporting, testing, mitigation, and monitoring as necessary to meet MassDEP Bureau of Waste Site Cleanup reporting requirements as detailed below. Please note that this is a long process, and multiple reports are required to meet MCP requirements.

DEP 02 **MassDEP reiterates that one or more RAM Plans or possibly a modified Phase IV Remedy Implementation Plan may be necessary for the various construction activities as proposed in the DEIR.**

Comment noted. The Airport will continue to work with MassDEP relative to any potential RAM Plans or a modified Phase IV Remedy Implementation Plan that may be necessary for the various construction activities.

DEP 03 **MassDEP also reiterates that the Proponent and LSP should evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347. All remediation waste shall be properly managed per the MCP.**

The Airport will consult a LSP to evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347.

DEP 04 **MassDEP also directs the Proponent's attention to the portions of the MCP that state that remedial activities shall not result in the exacerbation of contamination. The Proponent and the LSP should work together to ensure that future RAMs for the airport construction activities do not exacerbate contamination. In particular, it should be demonstrated that any excavation of, or introduction of, soil beneath the caps will not exacerbate groundwater contamination.**

The Airport will work with a LSP to ensure that future RAMs for the airport construction activities do not exacerbate contamination. There will be no excavation of the caps nor the addition of soil beneath the caps as part of the proposed project construction.

DEP 05 **The Project Proponent is advised that a spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential on-site activity releases.**

The Airport maintains a Spill Prevention, Control, and Countermeasure Plan (SPCCP) that identifies fuel storage and transfer locations at Airport facilities and provides information needed to prevent and respond to releases of oil and/or hazardous materials (OHM).

The SPCCP was updated in January 2020. The plan also contains an Emergency Response Action Plan (ERAP and provides contact information for emergency personnel as well as local, state, and federal emergency response agencies.

The Airport's SPCCP includes release reporting information, establishes personnel training requirements, outlines spill response procedures, and contains standard operation procedures (SOPs) for Airport operations. The Airport's On-Call Environmental consultant conducts yearly inspections to document compliance with the SPCCP.

A Construction Period SWPPP will include site and project specific SPCC measures as required by the NPDES Construction General Permit.

DEP 06 **The Proponent should determine if the Airport qualifies as a generator of hazardous waste and/or waste oil.**

The Proponent, Cape Cod Gateway Airport is a "generator" of hazardous waste and/or waste oil. Please refer to Section 7.1.1 for more information on the Proponent's "generator" status under federal and state law.

DEP 07 **The proponent should propose measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during construction.**

The construction contract for any proposed construction activities for the proposed Project will include requirements and measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during construction. This includes compliance with Odor and Dust Control Regulation – 310 CMR 7.09. Noise Control Regulation – 310 CMR 7.10 – Regulations adopted under the authority of M.G.L. Chapter 111, Section § 142B and § 142D.

DEP 08 **MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emission standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, then the Proponent should use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.**

The Airport will include in its construction contracts requirements that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits. If a piece of equipment is not available in the Tier 4 configuration, then the Airport will require the use of construction equipment that has been retrofitted with appropriate emissions reduction equipment.

Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs).

The contractor will be required to maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment.

DEP 09 **All aircraft, once on the ground, should cease to operate its engines until such time when departure is warranted. Alternatively, to running these engines on idle, when warranted to maintain comfort within these aircraft during the warm summer months, plug in stations should be provided by the airport as an alternative to the greenhouse gas emissions, air pollutant emissions and noise that are emitted while these engines continue to operate while on the ground to keep onboard systems (refrigeration, air conditioning, etc.) running.**

The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft under 14 CFR § 91.3. To the extent that it is safe to do so, the pilot in command may take measures to reduce engine running time.

DEP 10 **Sound impacts should be mitigated to extent practicable.**

The Project will include a noise mitigation plan to minimize, to the extent practicable, the generation of sound levels that will impact off-site receptors.

The noise mitigation plan will involve mitigation measures such as:

- Allowable construction timeframes will adhere to local requirements, which are anticipated to be work hours between 7:00 a.m. and 5:00 p.m., and major activities such as excavation or demolition will typically be limited to normal working hours;
- In accordance with Massachusetts Vehicle Idling Regulations, idling of construction equipment will comply with 310 CMR 7.11;
- Instituting a proactive program to ensure compliance with the applicable regulations or ordinances for noise limitation;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;

- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance;
- Construction equipment will be required to be properly maintained, lubricated, and fitted with properly functioning muffler systems; and
- To the extent practicable, specific activities such as crushing and pulverizing, as well as equipment staging areas, will be located at appropriate distances from residential receptors.

DEP 11 **Once the Project is occupied, MassDEP requests that the Proponent install permanent signs limiting idling to five minutes or less on-site.**

The Airport will install signs limiting idling to five minutes or less on-site.

DEP 12 **MassDEP recommends the Proponent consider source separation or separating different recyclable materials at the job site. Source separation may lead to higher recycling rates and lower recycling costs.**

The contractors selected for the construction phase will adhere to materials banned from disposal under 310 CMR 19.017: asphalt pavement, brick, concrete, metal, wood, and clean gypsum wallboard. The Airport will seek to recycle these materials at the job site to the greatest extent feasible. All recyclable materials will be separated to achieve a higher recycling rate and reduce recycling costs.

CAPE COD COMMISSION

CCC 01 **The DEIR includes a detailed alternatives analysis and some beneficial modifications, such as a decrease in the total acreage of new land alteration—from approximately 63 acres in the ENF to less than 50 as currently proposed. The Applicant should continue assessing any alternatives that might be less detrimental to sensitive resources.**

Chapter 2 of this document continues to assess alternatives which reduce impacts to sensitive resources and land.

CCC 02 **Among the identified alternatives, the retaining wall (2C) and bridge/elevated taxiway surface (2D) both appear less impactful to Upper Gate Pond than the preferred 2:1 side slope. These options warrant further evaluation in light of their potential wetland resource benefits. The cost and feasibility of providing mitigation for wetlands impacts, potentially at other locations, should be considered as part of this analysis.**

Additional alternatives for Taxiway D are evaluated in Section 2.1. As a result, a significant reduction in wetland impacts is anticipated with the identification of a new preferred alternative for Taxiway D. While Alternatives 2C results in slightly less permanent impacts, there would be an increase in temporary impacts and disturbance of pond bottom due to the space needed to construct the wall. As discussed in the Draft EA/EIR, a bridge span is cost prohibitive.

A wetland mitigation plan is presented in Section 5.1.

CCC 03 **The Runway 15-33 extension alternatives analysis notes that the preferred alternative adds only the minimum pavement necessary to meet runway length needs. We support the modification of the design initially selected in the ENF, which would have added more pavement than the current proposal.**

Comment noted.

CCC 04 **As the design for runway and taxiway modifications is finalized, the Applicant should identify any new areas where vegetated buffers can be maintained or re-established to protect nearby surface waters and incorporate these locations in landscaping and maintenance plans.**

See MEPA responses 42 and 45 above.

CCC 05 **The Applicant should plan for ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.**

See MEPA Responses 32 and 33 above.

CCC 06 **The Applicant should still aim to minimize tree and shrub clearing and land disturbance to the extent possible and mitigate when unavoidable.**

The Airport will minimize tree and shrub clearing and land disturbance to the extent possible. Tree/shrub clearing is proposed to be mitigated when unavoidable. Please see tree replanting plans to offset/mitigate loss from the proposed Projects are detailed in Chapter 6, Section 6.4.

CCC 07 **The DEIR proposes to offset carbon releases and loss of carbon sequestration resulting from the Project with tree planting/replanting, and preservation of forested areas north of the airport. Commission staff encourage the Applicant to pursue permanent protection of existing forest via conservation restriction where feasible and identify locations on-site and elsewhere in the Town of Barnstable that might be appropriate for new planting.**

Tree replanting plans to offset/mitigate loss from the proposed Projects are detailed in Chapter 6, Section 6.4. Tree replanting is proposed in specific locations on airport property along Barnstable Road. Also, the airport will coordinate with the Greening Hyannis program which The Town was awarded a grant through the Greening the Gateway Cities Grant Program to plant 2,400 trees in the community's Environmental Justice areas. The airport will assist with finding locations for trees and/or provide funding for tree replanting.

Please refer to MEPA #30 for a discussion on the application of a conservation restriction to existing forested areas owned by the Airport. Furthermore, the area is designated for aeronautical use which would require action from the FAA to release the land.

CCC 08 **The DEIR states the Applicant will prepare an avoidance plan for review by Massachusetts Historical Commission to address known archaeological sites in the area. The potential for unexpected discoveries should also be addressed by an unexpected discoveries plan and general monitoring of cultural resources during the construction process.**

FAA has commenced consultation with MHC regarding the draft archaeological protection plan. This consultation will continue on a parallel path.

CCC 09 **The Applicant commits to implementing a Transportation Demand Management ("TDM") program as part of the Master Plan. Commission staff support the inclusion of a TDM program as a method to reduce single-occupancy vehicle trips to the Airport and promote alternative transportation options.**

Comment noted. The airport will investigate/adopt TMD measures as part of the proposed Project.

CCC 10 **The DEIR notes several planned roadway infrastructure projects in the vicinity of the Project site, including but not limited to, the MassDOT Airport Rotary improvements and the Town of Barnstable Route 132 Corridor Improvements. We encourage the Applicant to review and coordinate with MassDOT and the Town of Barnstable to ensure multimodal connectivity is provided to the Airport from these roadways and major intersections.**

The Airport has already been in coordination with MassDOT and the Town relative to traffic improvement and roadway infrastructure projects in proximity to the airport. The Airport will continue to be involved in these planning meetings.

ASSOCIATION TO PRESERVE CAPE COD, INC.

AAPC 01 **Given that the taxiway will fill in part of the pond and destroy portions of the 100 and 200 ft. wetland buffer, it is difficult to envision that the taxiway's extremely close proximity to what remains of the wetland after construction will not lead to increased stormwater impacts to the [Upper Gate] pond.**

Within the Airport, 100% of stormwater that is discharged to Upper Gate and Lewis ponds undergo pre-treatment in five "Vortech" stormwater treatment units that are located underground. The units trap and retain trash, debris, and sediment from stormwater runoff. They remove 81 to 87% of total suspended solid and 67% of total petroleum hydrocarbons (TPH).

The Airport also has previously installed seven bioretention basins that collect stormwater from the Atlantic Aviation site as well as its associated aircraft parking area, access road, and several parking lots. These bioretention basins use plants, soil, and microbes to treat stormwater prior to discharge to an infiltration basin.

All stormwater from new impervious surfaces will be treated consistent with existing practices outlined above as well as meeting the Massachusetts Stormwater Standards requirement under the sections of the Wetlands Regulations, 310 CMR 10.00, and the Water Quality Regulations, 314 CMR 9.00.

Anticipated for late 2024, MassDEP intends to approve updated stormwater design standards to improve resiliency against increasing flooding, storm damage, and runoff pollution. The Project will achieve compliance with the standards anticipated by proposing and included stormwater control measures that meet the following new stormwater goals and guidance as follows:

- Replace outdated (60-year-old) precipitation data with up-to-date data (from the "NOAA 14 Atlas"). Storms have been increasing in intensity with climate change so today's "100-year storm" delivers more water than the 100-year storm of the 1960s. Using the older data to design stormwater systems results in pipes that are not large enough to carry the water. The water that is not captured in the systems can cause flooding, scouring of riverbanks, damage to buildings and bridges, and other problems. Using the up-to-date precipitation data to design stormwater systems will help to prevent stormwater from one property from causing damage to neighboring properties.

- Ensure resilience of wetlands resources and stormwater systems by requiring that systems are designed to handle extreme precipitation events. Rather than using the mid-point or "average" precipitation presented by NOAA Atlas 14, MassDEP is proposing to require that precipitation amounts be 90% of the upper end of the range of historical precipitation. This is called "NOAA 14 PLUS" and is proposed to ensure that stormwater from most (80%) storms will be adequately managed. This somewhat increased precipitation is based on actual events.
- Reduce flooding, reduce pollution, and replenish groundwater and streamflow by requiring that stormwater systems be designed to move more stormwater into the ground.
- Incentivize the use of nature and ecological processes to handle stormwater runoff and to prevent flooding and polluting nearby waters. This will reduce the amount of pavement and pipes and will be less costly for developers.
- Better align with the Environmental Protection Agency's requirements for stormwater management (through its General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in MA) to protect Massachusetts waters from harmful stormwater pollutants.

AAPC 02 **The DEIR states that there is the potential for up to 5,200 cubic yards of unconsolidated organic materials along the pond bottom to be excavated in order to provide suitable base material for the taxiway slope. Polycyclic aromatic hydrocarbons and lead are contaminants known to be present in Upper Gate Pond sediments, likely as a result of airport stormwater runoff. APCC recalls from airport projects in the previous decade, which required study of Upper Gate Pond and Lewis Pond, that the airport's environmental consultants determined it would be unwise to dredge the pond bottom in an attempt to remove contaminated sediments because it would release and distribute contaminants and further degrade pond water quality. APCC also questions whether releasing contaminants into the water body may impact groundwater.**

Insofar as dredging is necessary to remove unsuitable materials for the base of Taxiway D within the limits of BVW and LUW, dredging will impact vegetated wetlands along the limits of Upper Gate Pond. Appropriate best management practices such as metal sheet pile cofferdams and turbidity curtains will serve to isolate the work area and protect the adjacent BVW.

AAPC 03 **The project applicant has proposed, in very general, non-specific terms, possible mitigation for the wetland impacts that includes potential wetland replication on airport property (with limitations on what is acceptable to FAA guidelines) and/or on a property or properties elsewhere in the town of**

Barnstable. The DEIR states that the mitigation "will be designed in the subsequent permitting phases of the project." Given the scarcity of detailed information regarding any specific proposed mitigation actions, it is APCC's position that the mitigation measures described in Section 7 of the DEIR are inadequate in relation to the substantial impacts created by the work proposed in and adjacent to Upper Gate Pond and its wetland buffer. It is impossible for the public to adequately review and comment on the appropriateness of the mitigation for these significant wetland impacts if the mitigation plan is not provided in the MEPA review process.

Additional information on the Project's wetland impacts and proposed mitigation in Chapter 5: Wetlands and Stormwater. A specific wetland replication location, planting plan, hydrology and construction methodology is identified in Section 5.1.2. This conceptual replication plan will be presented to the regulatory agencies as part of the permitting phase. Once consensus is reached on a permittable plan, a draft wetland replication site plan will be developed, and accompanying narrative will be completed.

Mitigation area permit drawings will include erosion control details, grading plans, planting schedules and plans, and planting notes. Monitoring wells are to be installed. Construction of the wetland mitigation area, including fine grading, soils placement, and planting, shall be done under the supervision of a qualified wetland scientist.

AAPC 04 **Lastly, the applicant in the DEIR states, "Based on the proposed avoidance, minimization, and mitigation, in Section 6.1.5., there are no significant impacts on wetlands and surface water beyond the existing condition as a result of the Proposed Action." APCC completely rejects the suggestion that the impacts to Upper Gate Pond will not be significant.**

A new alternative, Alternative 5, was evaluated which would reduce impacts by removing the perimeter access road adjoining Taxiway D for a limited portion of the site. **This would result in a 35% reduction of permanent fill of 1,600 sf of BVW from the Preferred Alternative 2B presented in the Draft EA/EIR, from 4,600 sf to 3,000 sf,** meet mitigation requirements under the Barnstable Wetlands Protection Bylaw, Cape Cod Commission Water Resources Policy, Massachusetts Wetlands Protection Act, and MassDEP Water Quality Certificate regulations (see 314 CMR 9.06) and the WPA (see 310 CMR 10.55(4)(b)). The proposed ratio of replacement area to BVW loss is at least 1:1, and a total of 3,000 sf of BVW replication would be provided on Airport property proximate to the impact location(s). The wetland replication area will be designed and constructed as per MassDEP's *Massachusetts Inland Wetland Replication Guidelines, Second Edition* (September 2022).

The use of the word "significant" in this content refers to the "Significance Thresholds" utilized by FAA as the lead federal agency in charge of making a determination as part of the EA process under NEPA. The term is not used to imply there are no impacts to the wetlands – rather the impacts that result from the proposed projects will be addressed via the requirements under state and federal laws to mitigate (and minimize) impacts and overall these impacts are not anticipated to trigger a significance threshold for the applicable Environmental Impact Category (e.g., wetlands).

FAA utilizes the "Significance Thresholds" to make a determination upon review of the final EA, public comments, and applicable interagency and intergovernmental consultation. The responsible FAA official determines whether any environmental impacts analyzed in the EA are significant.

For more information, see FAA Order 1050.1F available at the following web address:
https://www.faa.gov/documentLibrary/media/Order/FAA_Order_1050_1F.pdf

AAPC 05 **APCC would like to see more assurances in the next EIR filing that the airport project construction and operation will not adversely impact the underlying aquifer, which is a source of public drinking water.**

The Cape Cod Aquifer is recharged solely by precipitation, with approximately 60% of rainfall and snowmelt contributing to recharge annually. Please see response to AAPC #01 for information relative to stormwater treatment proposed to avoid impacts to the groundwater.

AAPC 06 **To ensure continued remediation of existing PFAS contamination and to prevent additional contamination in the future, MassDEP should require, and the applicant should commit to, expanded sampling and monitoring of the airport property for the presence of PFAS and other contaminants, including within the proposed project area.**

PFAS is discussed extensively on the Airport's website here: https://flyhya.com/airport-info/pfas/

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). A majority of the PFAS impacted soil within the two effected areas have been capped to reduce infiltration and groundwater impacts. The caps are inspected bi-annually to verify their effectiveness.

The actual time for treatment will be based on the collection of analytical samples for laboratory analysis. Groundwater monitoring beyond 2029 may be conducted at the Airport as part of an annual activity and use limitation (AUL) inspection or if plume concentrations have not dropped below the applicable GW-1. Bi-annual reports will continue to be uploaded to MassDEP until a permanent solution can be obtained.

AAPC 07 **Additionally, the project's future EIR filing should provide more detail about proposed stormwater management, and should describe where and how LID and green infrastructure will be utilized, and where and how conventional stormwater treatment will be used. Where conventional stormwater treatment is proposed, the applicant should explain in detail why more modern LID and green infrastructure approaches are not feasible.**

The Airport has provided details in the Final EIR on proposed stormwater management in Chapter 5: Wetland and Stormwater. The chapter details the potential stormwater treatment methods and the feasibility for different areas of the airport.

AAPC 08 **The applicant should commit, at a minimum, to replacing the number of trees that will be lost. Ideally, the sequestration value of new tree plantings should be calculated to confirm that an equal carbon sequestration value will be preserved by the replacements.**

The Airport is committed to replanting trees as a component to offset lost benefits from trees that will need to be removed as a result of the Preferred Alternative. Tree replanting efforts will take place as part of the airport's compliance with stormwater management regulations (anticipated to be in effect in late 2024, per the pending MassDEP regulatory updates) and standards which require the use of LID and Environmental Sensitive Site Design practices.

Additionally, the Airport will work with the Town of Barnstable's Greening the Gateway Cities Tree Planting Program to identify areas (either on airport or off airport sites) to replant trees. This Program is funded via a grant awarded to the Town from the Greening the Gateway Cities Grant Program to plant 2,400 trees in the community's Environmental Justice areas. As the Airport property is located within the program's Planting Zone it is able to meet the needs of the program by increasing tree canopy in the community.

Tree replanting efforts are anticipated to realize numerous benefits including visual enhancements to neighborhoods, air quality, wildlife habitat, and increased shade.

Any tree planting undertaken by the airport will need to be compatible with the airport's protected surfaces associated with instrument and visual operations. The airport (both on airport and off airport) periodically cuts bushes and trees that penetrate or have the potential to penetrate any applicable navigable surfaces.

SIERRA CLUB-CAPE AND ISLANDS GROUP

SC 01 **The DEIR does not acknowledge or in any way mitigate historical and continuing unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport. In particular, decades of handling and use of aqueous film-forming firefighting foams (AFFF) at and around the Airport resulted in inadvertent but extensive PFAS contamination of public water supply wells and exposed Hyannis residents, students, workers, and visitors to significant but unknown amounts of hazardous but unknown chemical mixtures for significant but unknown time periods with potentially significant but unknown health consequences. PFAS-contaminated soil and the associated plumes flowing onto and emanating from Airport property continue to pose risks.**

In the Airport's Immediate Response Action (IRA) Status Report 14, IRA Completion Statement, Phase IV Final Report and Completion Statement, and Phase V Status Report (the "Report") for its property located at 480 Barnstable Road, Hyannis, Massachusetts (Horsley Witten, 2024), the comments provided on the DEIR by the Sierra Club have been previously addressed and are reiterated below to be responsive to the MEPA scope on the FEIR. This report is provided as Appendix C of this document.

"The Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEP's website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater (depicted in **Figure 3.1- 1**).

The Airport is not responsible for controlling non-airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility. Additionally, the Airport's PFAS plume reached Maher Wells after the construction of the new treatment was completed and as such, no exposure to the community is believed to have occurred" (Horsley Witten, 2024).

See also MEPA 23.

SC 02 **Sierra Club appreciates that the Airport has ceased use of AFFF except in emergency situations, that control measures are in place for when AFFF use is required, and that groundwater drawn from Hyannis-area wells is designated "safe" under the current state drinking water standard based on the granular activated carbon (GAC) treatment systems installed at various locations, including within the Maher wellfield located on property downgradient from the Airport owned by the town of Barnstable. However, this does not change the history of contamination and exposure in the Hyannis area nor erase current and future concerns facing EJ and other communities.**

See MEPA 23.

"The Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEP's website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater.

The Airport is not responsible for controlling non-Airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility. Additionally, the Airport's PFAS plume reached Maher Wells after the construction of the new treatment was completed and as such, no exposure to the community is believed to have occurred" (Horsley Witten, 2024).

SC 03 **The DEIR indicates that the Airport's proposed runway expansion and reconfiguration projects will utilize heavy machinery in moving hundreds of thousands of cubic yards of soil, including in locations coincident with and adjacent to temporary caps installed to prevent precipitation from mobilizing PFAS in soil contaminated by the Airport's own storage and use of AFFF. The DEIR asserts that precautions will be taken to ensure that these caps remain intact during construction and that the PFAS-contaminated soil will remain in place indefinitely, like a ticking time bomb. This is not acceptable.**

PFAS impacted soil in the East Ramp deployment area and at the ARFF/SRE Building area have been capped to prevent further groundwater impacts. Within the ARFF/SRE Building Area, pavement was used to create the cap. Within the deployment area within the vicinity of the east ramp, a

Geomembrane (30 mil Plastic liner), covered by topsoil and grass was utilized. Both caps prevent rain from leaching through the soil and entering groundwater. There are no proposed disturbances of these caps as part of the proposed projects.

As previously noted in the Draft EA/EIR, the airport will take all necessary precautions (e.g., marking construction limits) during all ground moving activities (e.g., grading, excavating, and fill) to ensure the capped areas of the airport remain intact during construction, and that the PFAS-contaminated soil will remain in place indefinitely.

SC 04 **Update and expand DEIR to characterize unfair and inequitable AFFF-related burdens imposed on designated EJ communities to the fullest extent possible based on available and emerging sources of data, including the federally funded "Massachusetts PFAS and Your Health Study" involving blood and urine sampling, exposure assessment, and neurobehavioral assessment of Hyannis residents led by Silent Spring Institute.**

The investigation referenced above, "Massachusetts PFAS and Your Health Study", led by Silent Spring Institute referenced in this comment does not appear to have published any formal findings, datasets, or submitted articles to peer-reviewed journals as of September 2024 (the time of this Final EIR) based on a review of the project's website located at the following address:

https://silentspring.org/project/cdcatsdr-multi-site-health-study-pfas/massachusetts-pfas-and-your-health-study

Based on the information gleaned from the website, this appears to be a five-year study that is ongoing and thus, it is not feasible to address this study in this document. The Airport continues to follow the requirements of the MCP, and updated documentation is provided for public review at:

- https://flyhya.com/airport-info/pfas/
- https://eeaonline.eea.state.ma.us/EEA/FileViewer/Rtn.aspx?rtn=4-0026347

SC 03 **...incorporate a permanent cleanup solution, to be implemented as a form of mitigation within the scope of the Airport's proposed projects, that will leverage the onsite availability of earth-moving equipment to remove AFFF-contaminated soil under the Airport's temporary caps for offsite transport, final disposition, and elimination of what would otherwise represent a "forever" source of risk to Hyannis-area communities.**

Removal of all PFAS impacted soil relating to the Airports historic use of AFFF is currently economically infeasible. As indicated in the Final Phase III Report dated June 2022 and prepared by HW (the "Phase III Report"):

"[T]he excavation of PFAS contaminated soils currently located below the two capped areas would result in approximately 3,000 trucks transporting approximately 105,000 tons of soil with an estimated transportation and disposal costs in excess of 75 million dollars. As such, large scale excavation is not justified by the benefits according to the Massachusetts Contingency Plan." The Phase III Report concludes that the existing caps along with potential future limited excavation and/or capping, is the final remedy for managing PFAS impacted soil at the Airport and as approved by the state agencies overseeing the remediation process. The caps are inspected, and groundwater data is collected every six months to document the effectiveness of the caps. This information is submitted to MassDEP every six months and is available online from MassDEP or the Airport's website.

Groundwater treatment for PFAS is occurring at the Maher wells treatment plant. The Town of Barnstable, through the Hyannis Water System will continue to operate the Maher Wells treatment plant and will continue to provide drinking water that meets the regulatory drinking water standards. The MassDEP periodically inspects the Maher Treatment plant under the water supply/drinking water program.

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). A majority of the PFAS impacted soil within the two effected areas have been capped to reduce infiltration and groundwater impacts. The caps are inspected bi-annually to verify their effectiveness.

SC 04 **The DEIR does not provide detail on or in any way mitigate aviation-related greenhouse gas emissions associated with long-term Airport operations, particularly those attributable to fuel sales at and around the Airport and to fuel consumption by commercial and private aircraft flying into and out of the Airport.**

The proposed project is not intended to induce more operations. The Final EIR has been updated to provide additional information on the Airport's climate/emission reduction efforts both included as part of the proposed projects, and also as part of its larger effort in association with MassDOT Aeronautics and U.S. DOE to develop a smart micro grid at the airport –

necessary for enabling the electric aircraft and vehicle infrastructure. Other GHG reduction commitments such as tree replanting efforts, and sustainable building requirements, are discussed in Sections 6.3 and 6.4 of the Climate Change Chapter.

SC 05 **Update and expand DEIR to present a current and detailed emission inventory for the Airport across all gases and sources, to apply these and other data in evaluating changes in aviation-related emissions attributable to the post-2005 expansion in fast-ferry service to the Islands, and to estimate future emissions under varying Airport usage scenarios including a no-build alternative.**

The Airport is in compliance with FAA requirements for air emissions for NEPA review and MEPA GHG analysis for stationary sources. The Airport is located in a NAAQS attainment area; is not in an Indirect Source Review designated area of Massachusetts; and is not located in an area with State Implementation Plan requirements. Therefore, no formal Emissions Dispersion and Modeling System or other air quality modeling is required. Instead, a qualitative analysis examining the background pollutant levels which are well within applicable air quality standards, and potential for changes and/or increases in air emissions was completed. The Project is not anticipated to result in additional emissions from any changes in operation due to several factors. This includes a near-term shift in commercial aircraft to a more fuel-efficient model which provides over 10% improvement in fuel and carbon emissions. Temporary emissions associated with construction are anticipated from the Project and will be mitigated to the extent possible as discussed below. Some additional emissions may result from increased vehicle traffic as discussed in the Draft EA/EIR. However, this additional traffic will not result in emissions sufficient to result in an exceedance of the NAAQS.

Furthermore, the Proposed Actions are anticipated to have little effect on air traffic volume over the next 5-7 years showing a modest increase of 1,000 operations by 2030, and will have minor effects on air traffic patterns, and therefore are not expected to have an adverse effect on air quality.

SC 06 **To incorporate a climate mitigation plan consistent with state policies and targets aimed at eliminating or minimizing aviation related emissions across the time periods encompassed by the Airport's Master Plan and the anticipated lifetime of the proposed projects.**

Climate mitigation efforts, and GHG reduction commitments such as tree replanting efforts, and sustainable building requirements, are discussed in Sections 6.3 and 6.4 of the Climate Change Chapter.

LINDA BOLLINGER, HYANNIS PARK CIVIC ASSOCIATION

LB 01 **Noise from aircrafts has been the number one issue for the majority of Hyannis Park residents. The regular interruption of our lives by low-flying aircraft either taking off or landing along current flight paths is incompatible with our coastal village way of life.**

Cape Cod Gateway Airport is very conscious of its location in urbanized Barnstable and on the border of the Town of Yarmouth. It works cooperatively with the airlines and their pilots to reduce aircraft noise and maintain a constructive dialogue with neighbors who may be affected.

The Airport has instituted noise abatement procedures and defined flight corridors. Our visual flight rules for aircraft are voluntary by law, and pilots and aircraft operators are strongly urged to follow them when safety permits. During times of instrument flight rules when pilots must fly under the guidance of radar, the procedures do not apply.

Please refer to the airport's noise program webpage for more information

https://flyhya.com/pilot-info/noise-abatement/.

LB 02 **Complete clean-up of contamination of groundwater, including (1) the timely containment of all identified PFAS plumes; and (2) the timely remediation of contaminated groundwater and affected soil at the source and downgradient from the source, is critical especially to a community south-southeast (i.e., downgradient) from the Airport like Hyannis Park.**

See SC 03.

LB 03 **A major concern of the project is the effects of plane emissions on human populations under flight paths.**

The Federal Aviation Administration (FAA) released a final rule on April 26, 2024, to limit carbon particles emitted by subsonic aircraft engines. This rule sets maximum standards for the amount of non-volatile particulate matter (nvPM) emissions from U.S. civil aircraft engines. It aligns with Environmental Protection Agency recommendations and International Civil Aviation Organization standards.

Engine manufacturers will have new emissions standards to follow to reduce harmful effects to health and the environment. This new rule gives manufacturers certainty about nvPM emissions criteria that they can use in developing the next generation of aircraft engines.

This action is part of the U.S. Aviation Climate Action Plan that sets out to achieve net-zero greenhouse gas emissions from the U.S. aviation sector by 2050. Find more information about the FAA and its environmental efforts at the following webpage: https://www.faa.gov/sustainability.

BETTY LUDTKE

BL 01 **It would be one thing for Cape Cod Gateway Airport to only analyze themselves as they seek to enlarge their operation, but it is quite another for Mass DoT Aviation and the FAA to join in this effort.**

The comment is unclear, however, we note that MassDOT and FAA are the state and federal aviation regulatory bodies overseeing the Airport's projects and associated environmental review and permitting – under both state and federal law.

They also provide funding and oversight to the current environmental review process under the MEPA and NEPA for the proposed projects. MassDOT and FAA officials have also attended project related public meetings (both during and beyond normal work hours) for the purpose of addressing and answering any concerns or questions from the community.

BL 02 **The preferred alternative is the only viable alternative because of encroachment. Then what? What does Gateway do after this expansion? Build more ramp space to accommodate more corporate jets? What does the next 100 years look like?**

Airport development is guided by the FAA and MassDOT Airport Master Plan Update process. FAA Advisory Circular (AC) 150/5070-6B provides guidance for the preparation of master plans for all airports. Master plans for individual airports will vary in what elements they include and in the level of detail.

An airport master plan is a comprehensive study of an airport and usually describes the short, medium, and long-term development plans to meet future aviation demand. The elements of a master planning process vary in complexity and level of detail, depending on the size, function, issues, and problems of the individual airport.

Specific areas of the airport (e.g., ramp space) are reviewed under the Master Plan's capacity analysis and recommendations are made based on existing uses and predictions for future demand.

Airport Master Plans use a "Forecast Horizon" approach and 5-, 10-, and 20- year time frames are typical for short, medium, and long-term forecasts. Planning beyond a 20-year period, such as a 100-year time frame, would not be typically funded by FAA and likely to be too hypothetical to provide useful information.

BL 03 **Air service for Cape Cod and the Islands needs to be studied regionally including accounting for any assets at Joint Base Cape Cod.**

MassDOT Aeronautics Division periodically conducts a Massachusetts Statewide Airport System Plan (MSASP), that serves as an important tool for the Commonwealth to help shape key policies and direct the development needs of Massachusetts' system of airports.

For more information, please use MassDOT's Aeronautics webpage at:

https://www.mass.gov/guides/massachusetts-statewide-airport-system-plan-msasp-history

FAA conducts a five-year study - The National Plan of Integrated Airport Systems (NPIAS) as required by 49 U.S.C. § 47103. The Federal Aviation Administration (FAA) is also required to maintain the plan for developing public-use airports in the United States and include the kind and estimated cost of eligible airport development necessary to provide a safe, efficient, and integrated system of public-use airport. To learn more, see:

https://www.mass.gov/guides/massachusetts-statewide-airport-system-plan-msasp-history

BL 04 **I am not sure why you cannot bring yourselves to recognize how encroached Cape Cod Gateway Airport is.**

The Airport has grown along with the community (both businesses and the flying public) since its establishment in 1928 – with the growth of the airport as a reflection of the desirability of the transportation services, business, and employment opportunities that it generates for the not just Hyannis, but for the wider Cape Community.

The Airport continues to operate safely and efficiently, and the proposed projects included in the EA/EIR are those identified to support and enhance the safety and efficiency of the airport into the future.

BL 05 **Just as I cannot understand why you won't even look at consolidating air operations at the largest airfield complex on Cape Cod.**

This comment notes the very large size of the runways at JBCC relative to other airports on the Cape. We specifically note the runway lengths at JBCC are as follows:

- Runway 14/32 9,501 × 150 ft and

- Runway 03/23 8,000 × 150 ft.

The JBCC runway lengths are comparable to Boston's Logan Airport runways– and by extension JBCC would be capable of serving the size aircraft that fly into and out of Logan. Opening of commercial carriers to operate out of JBCC would create a facility on the Cape that would be comparable to Logan in the size of aircraft it could accommodate, not just a "consolidation of air operations" from CCGA as suggested by the commentor.

Furthermore, JBCC has not publicly expressed any interest in opening its airfield to commercial carriers that we are aware of. Nor has JBCC expressed any ability to provide for the funding necessary to cover the costs of the transfer of existing tenants at the airport (e.g., hangars) and to refund the cost of those that would not choose to move – this cost is not known and likely to be cost prohibitive.

The comment does not cite any evidence that the JBCC is seeking to provide the same services as CCGA, and for the reasons expressed in response to BL #06, this idea has been deemed not feasible due to the significant financial, regulatory, and logistical issues that exist.

Lastly, it is important to note that several comments were received *in opposition* to this idea, for example, see WS #01, TC #01, HM #01, and GF #01.

BL 06 **There are viable alternatives to the Gateway expansion recommended in this study. Those have not been studied to the level required to make this Environmental Assessment adequate for the task.**

The comment does not provide any specific information as to what "alternatives" it is referring to. With regard to the "JBCC Alternative," MEPA notes the following on its Certificate of the Draft Environmental Impact Report (dated Feb. 16, 2024):

"The DEIR includes an evaluation of the use of JBCC as a public-use airport, with the closure of the Cape Cod Gateway Airport. The Proponent dismisses the alternative to use JBCC because it would shift environmental impacts to another community and notes the property itself is owned by the Commonwealth of Massachusetts and leased by the Federal Government, and hosts five different military commands, which would complicate jurisdictional issues; JBCC is outside of the control of the Cape Cod Gateway Airport Commission, which is an agency of the Town of Barnstable; would require a major change in land use for Falmouth; may not be positively received by the public; and is farther for commuting to Nantucket. In addition, the DEIR

identifies challenging constraints at the JBCC site and notes that the Airport supports emergency response and provides economic benefits to the local economy."

The Secretary in her scope for the Final EIR (pp. 26-32) in the Certificate for the DEIR (February 16, 2024), did not require additional analysis or consideration of the JBCC Alternative in the Final EIR.

TJ SULLY

TS 01 **This Report is a Complete Whitewash, especially on the so-called Part 150 noise study. You can't do a Noise study from a computer to get the effects of noise on the Residents. This Draft should be rejected, and the Gateway Airport be made to have a real part 150 study done.**

Per FAA, noise models are computer models used to predict the levels of aircraft noise exposure produced over a geographic area. Noise models are used to efficiently and accurately evaluate aircraft noise, including assessing the potential noise impacts resulting from changes in aircraft operations.

The Aviation Environmental Design Tool (AEDT) is the FAA's required noise and environmental modeling application for all U.S. domestic regulatory analyses requiring FAA review. AEDT replaces several legacy environmental modeling tools, including the Integrated Noise Model (INM), the Noise Integrated Routing System (NIRS) and the Emissions Dispersion Modeling System (EDMS).

FAA uses noise modeling due to the need to generate detailed noise results over large areas, noise modeling is the only practical way to accurately and reliably determine geospatial noise effects in the surrounding community when analyzing proposals related to aviation noise.

The many challenges and limitations to using noise measurements for evaluating airport vicinity noise are summarized below:

- Non-aircraft sound can have a large influence on noise monitoring data, which can be difficult to separate from aircraft noise during data post-processing.
- Long-term (e.g., year-long) noise monitoring requires regular maintenance and calibration of the individual noise monitors on a continuous, year-round basis, which has considerable costs.
- To ensure the same accuracy and fidelity of data generated by noise models, an extremely large number of noise monitoring locations is required. (e.g., tens of thousands of noise monitors, collecting year-round data in the vicinity of an airport would be needed to match the fidelity and accuracy of noise modeling).
- Noise monitoring data is not capable of analyzing either "what if" scenarios or proposed future action airport and air space scenarios.

DIANE LEDUC

DL 01 **The airport in Hyannis should never have been built there. Expanding it is a ridiculous idea.**

As noted in the EIR, the proposed Projects are needed to enhance overall operational safety and efficiency at the Cape Cod Gateway Airport. The Projects are based on the need to reasonably accommodate existing and anticipated aviation demand for the current families of aircraft, FAA and MassDOT safety and security requirements, and Airport financial self-sufficiency. The Airport is not proposing expansion.

The Airport operates as an enterprise fund and is financially self-sufficient from the town in meeting its operating obligations and future infrastructure needs. References to FAA airport design standards refer to FAA Advisory Circular (AC) 150/5300-13B, Airport Design.

With respect to the extension of Runway 15-33, the proposed length is extended from 5,255 feet to a total length of 6,150 feet. This length is based on the 2022 Airport Master Plan analysis conducted for the Airport's current family of aircraft using the Airport facility and those projected to use the Airport with typical stage lengths (i.e., distances of travel to/from the Cape Cod Gateway Airport).

The length analysis used to determine the length was also based on additional screening that has taken place during the environmental review process, including input from surrounding communities. This analysis eliminates the 33-end extension, reducing the runway length recommendation identified in the Master Plan Preferred Alternative by approximately 400 feet.

DL 02 **The people who live near the airport are being poisoned by the soot and chemicals that have migrated to their wells.**

This comment does not provide any specific information relative to the claims made. The Airport has provided documentation regarding efforts to address PFAS at the following website: https://flyhya.com/airport-info/pfas/.

DL 03 **The noise is awful.**

This statement expresses a feeling not a substantial comment on the proposed Project. No context or additional information is provided in the statement to provide a response to such as where and when the noise is taking place and frequency.

Cape Cod Gateway Airport is very conscious of its location in urbanized Barnstable and on the border of the Town of Yarmouth. It works cooperatively with the airlines and their pilots to reduce aircraft noise and maintain a constructive dialogue with neighbors who may be affected.

The airport has instituted noise abatement procedures and defined flight corridors. Our visual flight rules for aircraft are voluntary by law, and pilots and aircraft operators are strongly urged to follow them when safety permits. During times of instrument flight rules when pilots must fly under the guidance of radar, the procedures do not apply.

Please refer to the airport's noise program webpage for more information https://flyhya.com/pilot-info/noise-abatement/.

DL 04 **The man in charge of the Airforce Base in Bourne has said he'd be open to a conversation about moving the operation there.**

Comment noted, however, it is anecdotal in nature. It is not clear what "man" is being referred to. Furthermore, being "open to conversation" does not indicate a position in favor or against the idea.

GALILEO FARIA

GF 01 **I cannot understand the idea behind relocating the Cape Cod Gateway Airport to Otis Airforce Base are multiple levels. Simply the cost of relocating the airport ranging from FAA grants to private companies who operate within this airport would be so massive that I am not even sure how the Town could possibly even entertain this idea. I understand and sympathies with people who bring noise in the picture as an influential topic to this debate, but I also struggle with how this argument is valid as they are simple shifting the issue to someone else, for this instance it would be the residents of Mashpee.**

Comment noted.

HELYNE MEDEIROS

HM 01 **Does not support the Cape Cod Gateway Airport relocating to Otis Airforce Base.**

Comment noted.

WALTER SPOKOWSKI

WS 01 **The Cape Cod Gateway Airport (CCGA) has provided a crucial link in connecting Marine Home Center (MHC) operations on the islands with skilled, highly sought after workforce living in Barnstable County and the South Shore… Marine Home Center has demonstrated for over 40 years that the Hyannis airport is the only viable solution to its complex business model.**

Comment noted.

CHRISTINE GREELEY

CG 01 **Still unaddressed is the significant damage to land extending into the Mahar Wells and all the way down into Mill Creek in West Yarmouth draining finally into Lewis Bay.**

The Airport's PFAS plume is below the MassDEP GW-3 standard in all locations, which is protective of potential discharges to surface water. Analytical data and modeling indicate that the Airport's plume didn't reach the Maher Wells until 2022. It is anticipated that the Airport plume will enter Mill Creek, but at concentrations below the GW-1 and GW-3 standards as predicted by the fate and transport models. Please see the Airport's webpage on addressing PFAS here: https://flyhya.com/airport-info/pfas/.

As such, consistent with the Massachusetts Contingency Plan, the Airport's PFAS plume is not a risk to surface water. The Airport is not responsible for PFAS entering Mill Creek that may be above the GW-3 standard from others. Responsible parties associated with PFAS plumes impacting this area above regulatory criteria are not the responsibility of the Airport. This has been brought to the attention of MassDEP and others by the Airport. If a Responsible Party can be identified by the MassDEP, they will issue a Notice of Responsibility requiring the Responsible Party to initiate investigation and cleanup activities. The Airport is not responsible for PFAS plumes relating to non-Airport sources. It is now in the hands of MassDEP to determine next steps.

CG 02 **The need for a larger terminal facility seems absurd when the current terminal is empty most days and the airport has been trying to seek interested lessors for unoccupied space including restaurant/snack bar space. If not for the car rental counters at the far end of the terminal there are not even employees behind counters. And the parking lots are glaringly empty.**

This comment provides anecdotal information relative to the use of terminal retail spaces by lessors and the capacity of the terminal building and does not provide any supporting data.

The need for the terminal building reconfiguration of space and/or expansion is detailed in the 2022 Airport's Master Plan Section 5.3. The Master Plan information addresses the methodology, assumptions, and general planning-level factors used to analyze facility requirements for key functional areas of the Airport passenger terminal. The terminal facility expansion is beyond the horizon of projects addressed in this document. It is within the Phase 2 group of projects for 2030 or beyond, as may be necessary. Interim short-term internal improvements are proposed as described in Section 2.4 of this document.

Furthermore, the capacity requirements were analyzed in the based on several factors and compared to growth sources identified in the Master Plan - Chapter 4: Forecasts. As stated in the Master Plan, the methodology used to investigate terminal space requirements was ACRP Report 25: Airport Passenger Terminal Planning and Design, Volume 2: Spreadsheet Models and User's Guide.

CG 03 **Although PFAS contamination is being discussed, there is a significant issue of environmental pollution that has not been discussed, let alone addressed- the emissions clearly visible from the landing and departing aircraft. This is significant as recent studies show that it is particularly bad from smaller planes, which are heavy users of this airport. These emissions are very visible to the naked eye and are falling on the heavily populated areas around the runways. Barnstable has been allowing significant development of residential apartment complexes for several years now at the northern end of the airport, while Hyannis is a significant commercial town.**

See SC05 above.

CG 04 **There should be great concern about the enlargement of the airport as Barnstable approved, and now has, the 1st power transfer station for the Vineyard Wind ocean-based turbines. The issues about the dialectic fluids needed at the site required significant engineering and containment plans as any leakage of even a few gallons could destroy the aquifer. This facility sits in a direct line at the end of 15/33 and would be an environmental disaster for Cape Cod should an aircraft ever crash into it.**

Comment noted. The proposed projects relate to the safety and efficiency needs of the Airport – to serve the needs of the existing families of aircraft operating at the Airport, see FEIR/EA Chapter 1, Section 1.1 Purpose and Need. Accordingly, the proposed projects would serve to reduce the likelihood of an aircraft incident or accident.

CG 05 **Of additional concern is the fact that the airport needs to seek "easements" in order to complete their proposals. This comes after years of being told this would never be needed and development by our town should not encroach on the airport. These easements will be needed on environmentally fragile land and should not be allowed.**

Easements are needed for mostly Airport's current operating conditions. See Tables 1 These are to be acquired on a willing owner basis only. The easements are for control over airspace to provide enhanced safety for users of the Airport and NOT for future development. These are needed for the Airport's Object Free Areas, and Runway Protection Zones and are detailed in the Airport's Master

Plan update https://flyhya.com/wp-content/uploads/2022/05/5-HYA-Facility-Requirements-FINAL.pdf, where the Airport is seeking enhanced control over these areas that I currently does not have. Airspace control improvements are discussed in the Draft EA/EIR Section 4.2.

For the proposed extension on the Runway 15 end, the preferred alternative 4B does not include an extension on the Runway 33 end, and minimizes costs and impacts associated with off Airport property needed to be acquired for the construction of the Taxiway A extension to the ends of the extended Runway 33 end.

CG 06 **The final issues include the flight paths and procedures that compromise the quality of life for so many residential properties especially at the southern end of 15/33. For years we have been seeking a better design and compliance and have only ever gotten responses saying, "It's voluntary" or the "FAA doesn't require." Looking at current noise complaint data from the airport is meaningless as people have given up calling! They claim it's pointless and they get the same answer every time with no results. At this time, the Town of Yarmouth is attempting to work with the airport on developing serious responsive flight procedures- but increasing runways is not the best solution at this time to the significant issue of noise pollution. Noise pollution studies are now emerging that show it to be a significant public health issue.**

The airport is working with the FAA, MassDOT Aeronautics, its consultant, the Town of Yarmouth, and neighborhood stakeholders on possible flight procedures that may be feasible to reduce noise impacts experienced in surrounding areas. The timeline for this effort is beyond the timeframe of the FEIR/EA, and there is not yet a scope for this effort. The airport will make information relative to this effort available on its website when it is feasible and appropriate to do so.

THOMAS COLLIER

TC 01 **There is talk of moving the Airport operations over to Joint Base Cape Cod. The logistics and the expense of moving not just the Airport facilities but the airfield tenants such as Cape Air, Gull Air and even Griffin Avionics, make it economically unfeasible nor even practical.**

Comment noted.

TC 02 **As someone who has been here quite some time, the negative knee jerk reaction to "new development" is quite understandable. However, when you consider that the airport sits on 639 acres of land, which is zoned commercial/industrial, and has only developed a paltry 140 acres, this is probably the least developed commercial property in the area. Imagine how much more developed it would be for regular commercial use, which would bring much more noise and pollution from vehicles and other activity.**

Comment noted.

TC 03 **This project includes even more green technology, which would almost make their operations carbon neutral, which would be much less than the pollution from a parking lot of a local grocery store.**

While not a specifically a commitment proposed as part of this Project, the Airport is working on and committing resources to the planning, permitting, and design phases for a smart microgrid in conjunction with the MassDOT Aeronautics Division via a $1.95 million grant awarded from the U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) Program.

The future microgrid will generate and distribute clean, reliable power at the airport.

TC 04 **The land clearing effect on the environment is addressed extensively in their plan with off-setting mitigation strategies that would reduce any impact to a bare minimum.**

Comment noted. As discussed previously in the DEIR, the large amounts of undeveloped land contain forest and other land uses contribute to the overall carbon reductions identified – that effectively offset losses of carbon reductions associated with tree cutting identified due to the approximately 10-acre addition to the East Apron area for future hangars.

The Airport is committed to reducing the impacts from tree cutting and associated loss of carbon reducing forested areas – please see responses to MEPA #45 and #46.

KAREN INGEMIE

KI 01 – KI 05 **I have attended Cape Cod Gateway Airport public meetings, have contacted the noise abatement coordinator for years regarding these issues without resolution. I gave up complaining!!!!**

- **increased traffic, helicopters, larger jets, (charters, private, commercial) no notification**
- **risk incident factor of low altitude jets**
- **the frequency and chronic exposure to noise levels and air emission pollution**
- **the airports noise abatement procedures and defined flight paths**
- **the airports vector tracking system not reflecting the correct flight path of aircraft flying over residents. I have documented videos and tracking system screenshots.**

Please consider reviewing Cape Cod Gateway Airports Flight/Noise Abatement Procedures and potential flight path changes for arrival and departures to minimize aircraft noise and incident risk in the Hyannis Park residential area.

Comment noted. Cape Cod Gateway Airport is very conscious of its location in urbanized Barnstable and on the border of the Town of Yarmouth. It works cooperatively with the airlines and their pilots to reduce aircraft noise and maintain a constructive dialogue with neighbors who may be affected.

The airport has instituted noise abatement procedures and defined flight corridors. Our visual flight rules for aircraft are voluntary by law, and pilots and aircraft operators are strongly urged to follow them when safety permits. During times of instrument flight rules when pilots must fly under the guidance of radar, the procedures do not apply. View HYA's Flight Path Maps here: https://flyhya.com/pilot-info/noise-abatement/flight-paths/

Comments, questions, and other information related to airport noise are welcome via a designated phone number, 508-862-8268. Messages are taken live when possible or recorded on voicemail. The airport employs a noise abatement coordinator who receives and investigates all noise complaints.

Chapter 10.0

List of Preparers

10.0 LIST OF PREPARERS

This Final EIR has been prepared under the direction of the Cape Cod Gateway Airport, along with Epsilon Associates, Inc., ASG, GEI Consultants, and HSH to fulfill the requirements of MEPA for the Cape Cod Gateway Airport Master Plan Improvements Project at Cape Cod Gateway Airport, Barnstable, MA.

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Final Environmental Impact Report
EEA No. 16640

CAPE COD GATEWAY AIRPORT

MASTER PLAN IMPROVEMENT PROJECTS

APPENDICES A-J

Epsilon ASSOCIATES INC.

September 16, 2024

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Appendix A

Secretary's Certificate on the Draft EA/EIR

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February 16, 2024

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS ON THE DRAFT ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan
PROJECT MUNICIPALITY	: Barnstable (Hyannis)
PROJECT WATERSHED	: Cape Cod
EEA NUMBER	: 16640
PROJECT PROPONENT	: Cape Cod Gateway Airport
DATE NOTICED IN MONITOR	: December 22, 2023

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.08 of the MEPA regulations (301 CMR 11.00), I have reviewed the joint Draft Environmental Assessment (EA) and Draft Environmental Impact Report (DEIR) (Draft EA/EIR)[1] and hereby determine that it **adequately and properly complies** with MEPA and its implementing regulations. The Proponent may prepare and submit for review a Final Environmental Impact Report (FEIR) in accordance with the Scope included in this Certificate.

Project Description

As described in the DEIR, the Proponent proposes several improvements to the Cape Cod Gateway Airport (Airport) in Hyannis as outlined in the 2022 Master Plan Update (MPU),[2] which evaluated aviation demand forecasts, facility requirements, airport access and geometry, and navigation aids over a 20-year planning horizon. According to the DEIR, the MPU recommendations are needed to meet Federal Aviation Administration (FAA) airport safety standards[3] as well as future aviation demand including rehabilitation of existing infrastructure. One of the main objectives of the Master Plan is to develop feasible and flexible alternatives to meet forecast demand. While the primary purpose of proposed improvements is safety, improvements also support future airport growth.

[1] The filing was submitted to the MEPA Office as a joint Draft Environmental Assessment (EA) and DEIR. The Draft EA is prepared pursuant to the National Environmental Policy Act (NEPA). This Certificate will reference the "DEIR" for this joint document.
[2] The Master Plan was approved in May 2022 by the Cape Cod Gateway Airport Commission, the Massachusetts Department of Transportation (MassDOT) – Aeronautics Division and the FAA. See https://flyhya.com/master-plan/
[3] In particular, FAA Advisory Circular (AC) 150/5300-13B, Airport Design

Since the filing of the Environmental Notification Form (ENF) and based on comments received from the public during outreach meetings and Agency input, the projects included for consideration in the DEIR have been revised. Projects discussed in the DEIR only include those anticipated to receive federal and state funding in the near future (within five to seven years – Phase 1) and comprise extension of Runway 15, modification of taxiways (TWY) A, B and D, construction of a run-up area and noise wall, removal of TWY E, and aeronautical development within the North and East Ramp areas. Future projects anticipated to take place beyond a 7+ year timeframe (Phase 2), including terminal building improvements, are conceptual and not discussed in detail; however, the DEIR provides some analysis of these future projects and potential environmental impacts, such as traffic analysis and greenhouse gas (GHG) commitments related to building energy efficiency. The DEIR also presents the cumulative impacts of all phases at a conceptual level. To the extent full disclosures are not available as to individual Phase 2 components, one or more Notices of Project Change (NPC) filings may be required.

Components of the Master Plan (20-year period) include the following:

Airside[4]

- Runway 15-33 Extension (Phase 1)
  - Extend Runway 15 end by 895 feet (with a 695-foot displaced threshold[5]) to a total length of 6,150 feet from 5,255 feet
- Taxiway Modifications (Phase 1)
  - Construct new partial parallel TWY D with a 400-foot standard separation east of Runway 15-33 from proposed relocated TWY B to existing TWY A1
  - Remove portions of TWY D between existing TWY A and the new partial parallel TWY D and between Runway 6-24 and proposed relocated TWY B
  - Extend TWY A by 895 feet to provide a full-length parallel taxiway to Runway 15-33
  - Remove TWY E and the existing runup area and construct a new run-up area along the north side of the new partial parallel TWY D
  - Realign TWY B to a standard 400-foot separation south of Runway 6-24 and extend TWY B northward by 750 feet with two midfield taxiways to Runway 6-24 and a northern taxiway spanning Runway 6-24 to TWY C
  - Remove TWY C1 between TWY C and Runway 6-24
- Runway Safety Area Enhancement (Phase 2)
  - Install a ±200-foot by 400-foot engineered material arresting system (EMAS)[6] to the safety area beyond the end of Runway 24

Landside

- General Aviation (GA) improvements for apron and/or hangar development (Phase 1)
  - East Ramp: ±8.7 acres of land
  - North Ramp: ±31.3 acres of land
- Non-Aeronautical Land Use Development Areas (Phase 1)

[4] The DEIR notes airside facilities typically include runways, taxiways, airport lighting and markings, and navigational aids.
[5] A displaced threshold is a threshold located at a point on the runway other than the designated beginning of the runway. Displacement of a threshold reduces the length of runway available for landings. The portion of runway behind a displaced threshold is available for takeoffs in either direction and landings from the opposite direction.
[6] EMAS uses crushable material placed at the end of a runway to stop an aircraft that overruns the runway. The tires of the aircraft sink into the lightweight material and the aircraft is decelerated as it rolls through the material.

- Terminal Improvements to expand the existing 43,097 square foot (sf) terminal building for current and future demand (Phase 2)
- 20,000 sf Snow Removal Equipment (SRE) building (unclear if Phase 1 or Phase 2)

Airspace Safety Improvements

- Runway Safety Area (RSA) and Runway Object Free Area (ROFA) Avigation Easements (Phase 1)
- Airport control over Runway Protection Zone (RPZ) Properties (Phase 1)

The DEIR was required to clarify which project components are intended to support future growth in airport operations, and how implementation of each will be phased to accommodate growth projections over a specified time horizon. In response, the DEIR states that aeronautical development areas within the East and North Ramps (the area of GA improvements to support apron and hangar development) and Terminal Building enhancements (in Phase 2) are identified in the MPU as needed to support the future growth in airport operations (with a focus on operating safety and efficiency). Aeronautical development areas are on existing areas of the Airport sited for their proximity to existing infrastructure (terminal building, ramps, and fixed-base operators). Work proposed in these areas, such as runway extension and taxiway realignment, is largely proposed to support safety upgrades for current aircraft fleets, though the DEIR indicates that future airport operations may need to accommodate larger aircraft that are still in the current family of aircraft that use the Airport. The DEIR does not clearly describe the number of hangars that would be proposed, or any other development that is proposed on the East and North Ramps. The FEIR should provide this information.

Changes Since Filing the ENF

According to the DEIR, since the filing of the ENF, the Proponent has refined the project through conceptual design, additional needs analysis, and input from the community. The DEIR discusses additional alternatives evaluated for the project, including refined runway alternatives, options for an operational shift to Joint Base Cape Cod (JBCC), taxiway configurations, and airport terminal needs. The Proponent has shortened the proposed Runway 15-33 extension by 440 feet to address community concerns regarding noise and safety; no additional runway length is proposed to be added to the existing Runway 33-end. The Proponent has continued outreach to neighbors to provide updates on ongoing remediation efforts related to per- and poly-fluoroalkyl substances (PFAS).

The DEIR includes an updated noise analysis completed per FAA's required methodology which evaluates the updated preferred Runway 15-33 extension length. In addition, the DEIR describes minor changes to phasing of projects as annual Capital Improvement Plan (CIP) budgets are implemented at the state and federal level based on funding availability (Table 3.4-1 identifies the proposed project schedule from 2024 to 2029). Projects that have been determined to commence later than 2029 (including design phases) have been removed from the analysis provided in the DEIR (including any terminal modifications/expansion as well as the Runway 6 RSA enhancements). This analysis has been moved to Appendix C for information purposes only. Conceptual grading plans have progressed for the runway and taxiway projects, determining the limits of work, areas of new land disturbance, wetland impacts, and required safety area tree removal on Airport. An updated obstruction analysis for easement acquisition has also been completed.

Project Site

The Cape Cod Gateway Airport (the "Airport" or "project site") is located in Hyannis on Cape Cod. The Airport is bordered by a Massachusetts Fish and Wildlife designated conservation area and Route 6 to the north, Barnstable Road (Route 132) to the south, Yarmouth Road to the west, and an industrial park (Independence Park) to the east. The Airport is owned by the Town of Barnstable (Town) and provides commercial and GA services to Boston, New York and the islands of Martha's Vineyard and Nantucket. It is managed by the Cape Cod Gateway Airport Commission and airport staff. The Airport is zoned for Business and Industrial uses. Land uses surrounding the Airport property include agriculture, commercial, industrial, mixed uses, open land, and residential.

The Airport encompasses ±639 acres of land, of which ±140 acres is developed for airport facilities and operations including a single 43,097 sf Passenger Terminal Building, Air Traffic Control Tower (ATCT), parking facilities, aircraft ramps, hangars, runways, taxiways, an Airport Rescue and Fire Fighting (ARFF) building and an aircraft fuel farm. More than 45 private tenants lease space on parts of the Airport property. The Airport includes two runways: Runway 15-33 is 5,255 feet long by 150 feet wide and is aligned in a northwest to southeast direction and Runway 6-24 is 5,425 feet long by 150 feet wide and is aligned in a southwest to northeast direction. The Airport has seven taxiways designated A, A1, B, C, C1, D, and E. The Airport has three ramps (Terminal Ramp, East Ramp, and North Ramp), that provide ±369,500 sf of aircraft parking, fueling, and staging and maneuvering areas.

Approximately 460 acres of the Airport are undeveloped areas consisting of upland evergreen and deciduous forests, wetlands, and two ponds (Upper Gate Pond and Lewis Pond) to the north. The forested communities are located north of the intersection between the two runways, with smaller patches of forested lands northwest of the Runway 15 end and southeast of Runway 6-24. Wetland resources areas include Bordering Vegetated Wetlands (BVW), Land Under Water (LUW), and Bank. Several of the small, isolated freshwater wetlands located on or immediately adjacent to Airport property are identified as Potential Vernal Pools (PVPs). The project site is located within Cape Cod's public drinking water supply's wellhead protection areas (Zone II). According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, the majority of the Airport is within Zone X, an area of minimal flood hazard determined to be outside the 500-year flood (panels 25001C0566J and 25001C0567J, effective July 16, 2014); however, a small section of forested area near Mary Dunn Pond, within the Airport property, is within an area with a 0.2% annual chance of flood hazard.

The Airport contains areas mapped as Estimated Habitat of Rare Wildlife, Certified Vernal Pools and/or Priority Habitat of Rare Species as designated by the Massachusetts Natural Heritage and Endangered Species Program (NHESP). However, these areas are not within the limits of the proposed improvements described in the Master Plan. The northern portions of the ponds contain densely forested embankments, extending into the Hyannis Ponds Wildlife Management Area (WMA). No federally identified critical habitats are located at the Airport. The project site supports habitat for many bird species, both resident and migratory, including several birds that are protected under the Migratory Birds Treaty Act of 1918 and/or the Bald Eagle and Golden Eagle Protection Act of 1940.

The project site is within the Designated Geographic Area (DGA) of Environmental Justice (EJ) populations[7] located in whole or in part within 1 mile of the project site as stated in 301 CMR 11.02

[7] "Environmental Justice Population" is defined in M.G.L. c. 30, § 62 under four categories: Minority, Income, English Isolation, and a combined category of Minority and Income.

(definition of "DGA"). The project site is located within one EJ population characterized by Minority and Income; within 1 mile of 13 EJ populations characterized by Minority, Income, Minority and Income, and Minority, Income and English Isolation (10 in Barnstable and three in Yarmouth); and within 5 miles of ±20 EJ populations characterized by Minority, Income, Minority and Income, and Minority and English Isolation (13 in Barnstable and seven in Yarmouth).

Environmental Impacts and Mitigation

Table 1.5-1 provides a summary of potential impacts identified in the ENF and DEIR.

Table 1.5-1 Summary of ENF vs DEIR Impacts

	Existing	Change ENF	DEIR Update
Total Site Acreage (in acres)	639	0	0
New acres of altered land (in acres)	--	63	50*
Acres of Impervious Area (in acres)	167	27	40
Square feet of new bordering vegetated wetlands alteration (in sf)		3,427	4,600
Square feet of new other wetland alteration		+/-23,000	12,700 sf LUW 300 lf Bank
Footprint of buildings (in acres)	121	0.25	0.25**
Gross square footage	43,097	55,000	55,000
Internal roadways (in acres)	902	21	14***
Parking and other paved areas (in acres)	50	--	26.4
Vehicle trips per day	88	88	70 - 171****
Parking spaces	1,135	0	0
Other altered areas (in acres)	27	--	--
Undeveloped areas (in acres)	460	-21	-40
Water Use (Gallons per day [GPD])	7,0004	--	--
Water withdrawal (GPD)	7,000	--	--
Wastewater generation/treatment (GPD)	13,000	--	--

* Overall footprint of the Proposed Action includes vegetation converted to impervious surface and impacts of grading.
** This number does not include potential hangars which may be up to a total of 5 acres. These 5 acres overlap with the impervious surface number under "other paved areas."
*** Paved apron and ramp space is now included in" other paved surfaces."
**** 100% growth scenario (increase in 200 peak hour passenger design capacity). Increased trips represent between a 0.51% and 1.30% increase in daily and peak hour volumes, respectively, along the major travel routes.

Future new buildings, expansions, or additions (i.e., the 30,600-sf terminal building expansion proposed for Phase 2 and addition of new hangars on the East and North Ramps in Phase 1 and a 20,000-sf Snow Removal Equipment (SRE) building in Phase 1 or 2) may generate new vehicle trips, increase water use, generate wastewater and emit greenhouse gasses (GHG) associated with energy use and transportation; these impacts were not quantified in the DEIR as the Proponent does not expect to construct any new buildings, expansions, or additions in the next five to seven years. The project will require tree clearing for Runway 15-33 Extension and Aeronautical Development at the East Ramp (hangar expansion at the East Ramp will require 6.11 acres of tree removal and 17.3 acres of new impervious area).

Measures proposed to avoid, minimize and mitigate environmental impacts include implementation of eight electric vehicle (EV) charging stations and electric aircraft charging infrastructure (as technology advances); construction of new or renovated buildings to meet the 2023 Stretch Code with 100% heat pump space heating; construction of 4,600 sf of wetland replication; construction of a stormwater management system to improve water quality, reduce flow rates and infiltrate runoff; implementation of Transportation Demand Management (TDM); monitoring of groundwater to track PFAS plume at the Airport; and construction-period Best Management Practices (BMPs) to minimize noise, air and water quality impacts including construction of a noise barrier along the proposed run-up pad for noise protection. Additional measures should be specified in the FEIR.

Permitting and Jurisdiction

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(1)(a)(1) and 11.03(1)(a)(2) because it requires Agency Actions and will result in direct alteration of 50 or more acres of land and creation of 10 or more acres of impervious area, respectively. The project is also required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it is located within a DGA (1 mile) around one or more EJ Populations. The project exceeds ENF thresholds at 11.03(6)(b)(3) for expansion of an existing runway at an airport, 11.03(6)(b)(4) for construction of a New taxiway at an airport, and 11.03(3)(b)(1)(f) for alteration of one-half or more acres of other wetlands (LUW). The project requires a Section 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection (MassDEP). It is subject to the MEPA GHG Emissions Policy and Protocol.

The project will require an Order of Conditions from the Barnstable Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions (SOC) from MassDEP); submittal of a pre-construction notification (PCN) to the U.S. Army Corps of Engineers (ACOE) seeking authorization under the General Permits for Massachusetts in accordance with Section 404 of the Clean Water Act; review by the Massachusetts Historical Commission (MHC), FAA and ACOE pursuant to Section 106 of the National Historic Preservation Act of 1966; review by FAA; Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act; preparation and review of an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA); a National Pollutant Discharge Elimination System (NPDES) Construction General Permit and Sole Source Aquifer Review from the U.S. Environmental Protection Agency (EPA); federal consistency review by the Massachusetts Office of Coastal Zone Management (CZM); and review by the Cape Cod Commission as a Development of Regional Impact (DRI). The Airport obtained coverage under the Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity in 2021 (Appendix L).

The Proponent has received and may seek additional Financial Assistance through the Massachusetts Department of Transportation (MassDOT) Aeronautics Division ($7.5 million over a 20-year period). Therefore, MEPA jurisdiction is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment, as defined in the MEPA regulations.

Review of the DEIR

The DEIR provides a brief description of the Airport and Master Plan (Chapter 1); a discussion of the purpose and need for the project (Chapter 2); a description of the project (Chapter 3); an expanded analysis of alternatives (Chapter 4); a description of existing environmental conditions (Chapter 5); an evaluation of environmental impacts associated with the project, the No Action alternative, and other alternatives considered for analysis (Chapter 6); measures to avoid, minimize and mitigate impacts (Chapter 7); a description of compliance with applicable federal, state, and local regulations (Chapter 8); and responses to comments received on the ENF (Chapter 10). The DEIR identifies changes to activities contemplated under the Master Plan, including changes in proposed phasing since the filing of the ENF. It includes plans of existing conditions and conceptual plans for all major project components on-site; no off-site work is proposed at this time. The DEIR describes existing avigation easements (Sheet 23 of the Airport Layout Plan in Appendix D) and proposed avigation easements that will be acquired.

To provide context for the proposed activities under the Master Plan, the DEIR provides an overview of the airport's functions and activities related to GA and commercial services, including operations and enplanement data. The DEIR provides information on the role that each of the project components will play in meeting the safety and efficiency goals of the Airport, as required by FAA and state aeronautical regulations and guidelines. It identifies applicable FAA design guidelines and/or standards to be addressed by each project. It provides a general description of airport operations, including hours of operation, conditions under which each runway is used, airplane taxiing and parking, and use of hangars and other Airport buildings. It includes data on past (2008 to 2023), current and projected levels of passenger volumes and aircraft operations on both an annual basis to justify the need to expand runway and taxiway capacity and to expand hangar space and other infrastructure to accommodate projected airport and passenger growth over time. Information was not provided specifically for peak summer months. Aeronautical development areas within the East and North Ramps and Terminal Building enhancements are identified in the MPU as needed to support the future growth in airport operations (with a focus on operating safety and efficiency). Specific project components intended to support future growth include proposed hangars at the East and North Ramps and terminal expansion. The DEIR notes that this development responds to Airport users waiting for hangars to be constructed on the airfield. Development of hangars (both size and configuration) is dependent on a private developer's need and business plan. Any future hangar development will be subject to the Airport's *Guidelines for Construction and Alteration at Cape Cod Gateway Airport.* The Airport Commission has worked with tenants for over 20 years to provide guidance on airport development for both new development and improvements to existing infrastructure that is either owned or leased by its tenants and associated businesses.

Alternatives Analysis

As stated in the ENF Certificate, project alternatives were conceptually reviewed in the ENF for all project components included in the MPU, including those related to Airside Alternatives, Terminal D Alternatives, Runway 6-24 Alternatives, and Terminal Building Alternatives. These alternatives were reviewed solely with respect to Level 1 and 2 screening criteria and did not comprehensively consider environmental impacts (Level 3 criteria). Supplemental evaluation of environmental criteria was required to be provided in the DEIR.

According to the DEIR, alternatives were analyzed consistent with the purpose and need for proposed projects (i.e., infrastructure constraints, FAA standards and facility requirements). The DEIR evaluates additional alternatives based on preliminary design concepts used to identify environmental impacts, community impacts and estimated cost. It states that the analysis on alternatives considers what effect changing the parameters of a project, or components, will have on the environment. The alternatives analysis describes the No Build Alternative, Preferred Alternative, and other alternatives for proposed projects within a 5–7-year time frame except for Landside projects. Given that Landside projects, most notably the hangar development in the East and North Ramps, are proposed in the 5-7-year time frame, an alternatives analysis as to all remaining project components should be provided in the FEIR. In addition, conceptual alternatives as to Phase 2 projects should be discussed; I note, in particular, that the Terminal Building Alternatives were reviewed in the ENF based on Level 1 and 2 screening criteria, so Level 3 criteria (environmental impacts) should be discussed in the FEIR. To the extent the Airport wishes to defer consideration of alternatives for Phase 2, a specific procedure for such consideration through a future NPC filing should be proposed in the FEIR. Any Phase 2 projects that are proposed to be deferred for later review should be clearly severable from other project components, and earlier phases should not preclude or constrain alternatives to be considered for Phase 2.

Airside Alternatives

Airside alternatives (related to arrival/departure of aircraft) were evaluated to identify potential solutions to non-standard FAA geometry or design conditions as identified in the MPU. FAA Advisory Circular (AC) 150/5300-13B, Airport Design contains standards and recommendations for the geometric layout and design of runways, taxiways, aprons, and other facilities at airports to ensure safety and efficiency. The MPU reviewed the design standards to ensure safety and efficiency of current and future Airport users and to identify basic aircraft characteristics which the Airport design will need to meet. The DEIR identifies the design critical aircraft[8] (determined by the MPU) which sets dimensional requirements on an airport (i.e., separation distance between taxiways and runways, and size of certain areas protecting the safety of aircraft operations and passengers). Aircraft operational area dimensions are matched to the most demanding aircraft that regularly use runways, taxiways, and apron areas. Existing and proposed design aircraft are reviewed on an individual basis per FAA AC 150/5325-4B *Runway Length Requirements for Airport Design*. However, the runway length analysis looked at the family of aircraft using the facility now and proposed to use the facility in the future. The MPU also reviewed the Airport's existing taxiway system with the design standards in AC 150/5300-13B to evaluate compliance with current standards for taxiway width, taxiway safety areas (TSA), taxiway object free areas (TOFAs), taxiway shoulders, taxiway gradient, and for parallel taxiways, the distance between the runway and taxiway centerlines.

Runway 15-33 Extension

As described in the DEIR, additional runway length is needed at the Airport to meet the requirements of the critical aircraft to enhance safety and efficiency of operations. Because Runway 15-33 is considered the "bad weather" runway at the Airport, it was selected for extension. The DEIR provides an expanded analysis of Runway 15-33 ENF Preferred Alternative (Alternative 4) that reviews two alternatives, both of which exclude the 440-feet expansion from the Runway 33 end that was proposed in Alternative 4.

Alternative 4A proposes a total runway length of 6,055 feet (801-foot extension only to Runway 15 end) including a 695-foot displaced threshold on the Runway 15 end. This alternative meets the runway length needs of critical aircraft for takeoff on both runways and limits and avoids off Airport impacts to surrounding communities. Compared to all other alternatives, Alternative 4A results in reduced obstruction impacts, less impervious area, reduced costs and off-site acquisitions to extend TWY A to the ends of the extended Runway 33 end and meets takeoff runway available (TORA) recommendations for critical aircraft. This alternative does not meet the facility requirements for landing needs for Runway 15-33.

Alternative 4B proposes a total runway length of 6,150 feet (895-foot extension only to the Runway 15 end) including a 695-foot displaced threshold on the Runway 15 end resulting in a TORA of 6,150 feet and an LDA of 5,455 feet. Runway 33 TORA would increase to 6,150 feet also, and more importantly, LDA would increase to 6,000 feet to provide a runway that meets the LDA for the critical aircraft. Alternative 4B results in similar impacts as Alternative 4A except for an increase in runway

[8] Critical aircraft is defined as "the most demanding aircraft type or grouping of aircraft (family of aircraft) with similar characteristics, which make regular use of the airport." Regular use is 500 annual operations, including both itinerant and local operations but excluding touch-and-go operations. An operation is either a takeoff or landing.

length by 94 feet (from 801 feet to 895 feet extension at the Runway 15 end) with additional land alteration and impervious area creation. However, Alternative 4B was selected as the Preferred Alternative as it meets the purpose and need of the runway length recommendation and would result in less land alteration, impervious area and community impacts than the ENF Preferred Alternative.

The DEIR includes an evaluation of the use of JBCC as a public-use airport, with the closure of the Cape Cod Gateway Airport. The Proponent dismisses the alternative to use JBCC because it would shift environmental impacts to another community and notes the property itself is owned by the Commonwealth of Massachusetts and leased by the Federal Government, and hosts five different military commands, which would complicate jurisdictional issues; JBCC is outside of the control of the Cape Cod Gateway Airport Commission, which is an agency of the Town of Barnstable; would require a major change in land use for Falmouth; may not be positively received by the public; and is farther for commuting to Nantucket. In addition, the DEIR identifies challenging constraints at the JBCC site and note that the Airport supports emergency response and provides economic benefits to the local economy.

TWY D

The DEIR reviews TWY D Alternatives that improve multiple existing non-standard geometry conditions associated with the taxiway intersection angle, high energy intersections, direct access and multiple taxiway crossings. The Preferred Alternative/Alternative 2 would construct a partial parallel taxiway east of Runway 15-33 with a 400-foot standard runway centerline to taxiway centerline separation. This alternative would also construct an engine run-up area along the north side of the proposed partial parallel TWY D and adjacent to the existing TWY E run-up pit, which would be removed. A blast fence/wall would be constructed next to the proposed run-up pit both for blast and noise protection. Proposed TWY D would result in impacts to BVW, Bank, and LUW associated with Upper Gate Pond. The DEIR evaluates design options for reducing wetland resource areas impacts including Alternatives 2A (4:1 slope), 2B/Preferred Alternative (2:1 slope), 2C (retaining wall), and 2D (bridge) as described in the Table 4.1-5.

Table 4.1-5 Wetland Resource Area Impacts for Alternative 2 Options

Alternative	Resource Area Impacts		
	BVW (sf)	Bank (lf)	LUW (sf)
Alternative 2A – 4:1 Slope	11,790	540	27,980
Alternative 2B – 2:1 Slope	4,600	300	12,700
Alternative 2C – Retaining Wall	3,500	230	7,100
Alternative 2D - Bridge	0	100 (shadow)	10,000 (shadow)

Alternative 2A (standard side slope of 4:1) would result in the largest impacts on BVW, Bank, and LUW due to fill on the north side of the taxiway. Alternative 2B/Preferred Alternative (steeper side slope of 2:1) would result in lower impacts on BVW, Bank, and LUW due to the increased sides slopes to the north of TWY D and wider area of TSA and TOFA. Alternative 2C (retaining wall) would result in reduced impacts on BVW, Bank, and LUW) over the impacts from 2A and 2B, due to the ability to create steeper side slopes to the north of TWY D and wider area of TSA and TOFA. The DEIR asserts this alternative was dismissed because higher side slopes do not meet the TSA and TOFA standards, it would still result in impacts on Upper Gate Pond and be costly. Alternative 2D (bridge/elevated taxiway surface would construct a bridge component to TWY D at the segment crossing Upper Gate Pond, spanning the bottom of the taxiway side slopes and would result in the lowest direct impacts on Upper Gate Pond. This alternative was eliminated from consideration because it requires extensive structural

design, significant amounts of new construction, as well as high costs.

The DEIR also evaluates Alternative 4 (Reduced Taxiway/Runway Separation) which would locate a parallel TWY D south of Upper Gate Pond closer to Runway 15-33, compared to prior alternatives, to avoid impacts associated with BVW, Bank and LUW entirely. In Alternative 4, TWY D would be located ±300 feet from the runway centerline instead of 400 feet. Additionally, there would be less tree removal required for obstructions. According to the DEIR, locating the taxiway less than 400 feet from Runway 15-33 would not meet FAA separation standards, which are based on the critical aircraft. Taxiway/Runway separation distances are a safety-based standard to protect the safety of the flying public. The DEIR asserts that this alternative results in a non-standard geometry on the airfield, which results in unsafe conditions, and would not be approved by FAA. Therefore, it was eliminated. As noted below, the FEIR should continue to assess alternatives to taxiway design to minimize wetland impacts.

Environmental Justice

As noted above, the project site is located within one EJ population characterized by Minority and Income; within 1 mile of 13 EJ populations characterized by Minority, Income, Minority and Income, and Minority, Income and English Isolation (10 in Barnstable and three in Yarmouth); and within 5 miles of ±20 EJ populations characterized by Minority, Income, Minority and Income, and Minority and English Isolation (13 in Barnstable and seven in Yarmouth). Within the census tracts containing the above EJ populations in the DGA, the following languages are identified as those spoken by 5% or more of residents who also identify as not speaking English very well: Portuguese or Portuguese Creole and Spanish or Spanish Creole.

The DEIR describes the public involvement plan that the Proponent has undertaken to engage with EJ Populations. A project website was created to provide information, updates, meeting notices, and presentation materials[9] and project-specific email was made available to allow the public to contact the Proponent with any questions or comments.[10] In accordance with the Scope, the Proponent obtained an updated "EJ Reference List" from the MEPA office, which included a list of Community Based Organizations (CBOs) and tribes/indigenous organizations. The Proponent held a public outreach meeting virtually at 2:00 PM (±35 attendees) and in-person at the Barnstable Town Hall at 6:00 PM (±40 attendees) on Thursday, June 21, 2023,[11] to provide an update on revisions to the project and share information on additional impact analyses conducted since the filing of the ENF. Efforts to promote the meeting included newspaper ads and emails to stakeholders, updates to the project website (after the meeting, the presentation was published on the website). Translation services were also offered in Spanish and Portuguese. On September 6, 2023, a FAA Noise Policy Letter was distributed to stakeholders notifying them of the opportunity to comment on FAA's Noise Policy Review Process, including evaluating use of Day-Night Average Sound Level (DNL) as the primary noise metric. The letter noted that the comment period opened on May 1, 2023, and ended on September 29, 2023. A second meeting was also held on December 12, 2023 (virtually at 2:00 PM (±35 attendees) and in-person meeting at 6:00 PM at Barnstable Town Hall (±15 to 20 attendees) to inform the public of studies conducted since the June 2023 meeting.[12] Advance notice of this meeting was communicated to the

[9] www.flyhya.com/environmentalassessment
[10] enviroHYA@epsilonassociates.com
[11] Email from Alyssa Jacobs, Epsilon Associates on behalf of the Proponent on February 13, 2024 to Purvi Patel (MEPA).
[12] Email from Alyssa Jacobs, Epsilon Associates on behalf of the Proponent on February 13, 2024 to Purvi Patel (MEPA).

public. Email notification was distributed to the EJ Reference List and larger project distribution list indicating that the DEIR is under MEPA review with opportunities for public involvement. The DEIR indicates that the Proponent remains committed to a comprehensive community outreach process and plans to continue efforts to engage with community members and groups to provide opportunities for the public to learn more about the project, ask questions, and share concerns as the project progresses.

The DEIR contains a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1. and the MEPA Interim Protocol for Analysis of EJ Impacts. According to the DEIR, the data surveyed show some indication of an existing "unfair or inequitable" burden impacting identified EJ Populations. The DPH EJ Tool identifies two municipalities (Barnstable and Yarmouth) and census tracts within the one mile DGA as exhibiting "vulnerable health EJ criteria"; this term is defined in the DPH EJ Tool to include any one of four environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average.[13] Specifically, within the Project's DGA, Barnstable, Yarmouth, and the identified census tracts meet the vulnerable health EJ criteria for the following parameters:

- Low birth weight (census tracts 25001012102 (Barnstable) and 25001015300 (Yarmouth))
- Childhood Asthma (Barnstable)

In addition, the DEIR indicates that the following sources of potential pollution exist within the one-mile DGA or within EJ block groups that are located partially within the one-mile DGA, based on the mapping layers available in the DPH EJ Tool:

- Major air and waste facilities: 2 large quantity toxic users and 17 large quantity generators
- M.G.L. c. 21E sites: 54 including 2 Tier 1 sites and 2 Tier 1D sites
- MassDEP sites with Activity Use Limitations (AULs): 1
- Underground storage tanks: 22
- EPA facilities: 19
- Road infrastructure: 3 (MassDOT roads – Routes 6, 28, and 132) and Boston to Cape Bikeway
- MBTA Bus and Rapid Transit: commuter rail station (Hyannis Transportation Center) and several parking lots (Hy-Line and Steamship Authority)
- Other transportation infrastructure: airports, freight yards, water taxis, railroad tracks and ferry routes
- Region transit agencies: 15 bus routes for the Regional Transit Authorities of Massachusetts and associated bus stops; Cape Cod Regional Transit Authority (CCRTA) with 27 stops
- Energy generation and supply: 1 power plant and 8 transmission lines

Although not required by the MEPA Interim Protocol for Analysis of EJ Impacts, the DEIR also surveyed environmental indicators tracked through the U.S. EPA's "EJ Screen," which shows a percentile measure of each indicator as compared to the MA statewide average. The DEIR evaluated the following indicators within the one-mile DGA:

[13] See https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html. Four vulnerable health EJ criteria are tracked in the DPH EJ Viewer by municipality (heart attack hospitalization, childhood asthma, childhood blood lead, and low birth weight), and two (childhood blood lead, and low birth weight) are also available on a census tract level.

- Particulate Matter (PM): 5th percentile
- Ozone: 62nd percentile
- NATA Diesel Particulate Matter (DPM): 4th percentile
- NATA Air Toxics Cancer Risk: 0 percentile
- NATA Respiratory Hazard Index Ratio: 2nd percentile
- Toxic Release to Air: 6th percentile
- Traffic Proximity: 23rd percentile
- Lead Paint: 9th percentile
- Superfund Proximity: 45th percentile
- RMP Facility Proximity: 2nd percentile
- Hazardous Waste Proximity: 10th percentile
- Underground Storage Tanks: 20th percentile
- Wastewater Discharge: N/A

Based on the study of vulnerable health EJ criteria, the data shows that some EJ communities in the DGA are considered vulnerable or subject to at least some level of existing environmental burdens. The DEIR asserts that the project is not anticipated to impact or contribute to any of the listed potential sources of pollution described above nor add to them and will not materially exacerbate the existing health burden of the EJ communities around the project site. It further asserts that analysis of estimated risk ratings for climate parameters (e.g., temperature, precipitation) does not indicate elevated climate risks for EJ populations within the DGA and the project is not expected to produce any direct climate impacts that will affect EJ populations. The EJ Screen analysis results show that none of the indicators are shown to be 80th percentile or higher of statewide average within one mile of the project site.

According to the transportation analysis presented in the DEIR, an addition of 200 peak hour passengers may result in a traffic volume increase between 13 and 31 vehicle trips per hour (0.51 to 1.3% increase in peak hour volumes along the major travel routes). The analysis reflects new traffic generation associated with the potential terminal expansion anticipated to occur beyond a 7+ year timeframe (Phase 2). The analysis does not appear to include traffic associated with the proposed hangars at the East and North Ramps. Potential terminal expansion is expected to result in up to +2,279 tons per year (tpy) increase in mobile source GHG emissions, as further discussed below. According to the DEIR, these components are not expected to result in a significant increase in vehicle and truck traffic and impacts on surrounding roadways are anticipated to be minor under future growth scenarios.

The DEIR states that the Airport is in a NAAQS attainment area and notes that minor project-related contributions from vehicles will not contribute to air pollutant concentrations that would result in an exceedance of the NAAQS; therefore, no disproportionate adverse effect on EJ populations is anticipated as a result of the project. Minor temporary air quality impacts (i.e., from fugitive dust and construction vehicles during construction) will be minimized and mitigated through use of construction period BMPs. While the DEIR indicates that no increase in airplane emissions will result from the project, this does not appear to account for projected future growth in airport activity or the expansion in hangar space and other infrastructure need to support airport expansion. This clarification should be provided in the FEIR.

The project will create ±40 acres of impervious area.[14] According to the DEIR, the project is not anticipated to contribute to additional risk to the surrounding areas and to EJ Populations relative to flooding because the project site has been designed to mitigate any impacts that are created as a result of the new impervious area. The Airport intends to install new leaching catch basins and infiltration chambers to enhance flood protection during storms and flooding events. The DEIR does not analyze the stormwater management system to specifically assess whether flooding risks may be exacerbated for nearby EJ populations under future climate conditions.

The DEIR discusses EPA's endangerment finding regarding emissions of lead from aircraft that operate on leaded fuel and associated air pollution which may endanger public health and welfare under the Clean Air Act[15] and upcoming proposal and promulgation of regulatory standards for lead emissions from certain aircraft engines. Concurrently, the FAA will develop standards that address the composition, chemical, or physical properties of an aircraft fuel or fuel additive to control or eliminate aircraft lead emissions. EPA and FAA have started work on regulatory options to address lead emissions from aircraft engines. According to the DEIR, aircraft that use leaded aviation gasoline are generally small piston-engine aircraft; jet aircraft used for commercial transport do not operate on leaded fuel. EPA notes that levels of airborne lead in the U.S. have declined 99% since 1980, while acknowledging that emissions from aircraft that operate on leaded fuel may still pose risks to nearby communities, including those with EJ concerns. The DEIR states that the project is not expected to increase piston aircraft operations.

The DEIR provides a discussion of reasonably foreseeable public health consequences from any environmental impacts of the project, including any impacts that might exacerbate the vulnerable health EJ criteria. According to the DEIR, the discussion also serves to identify and assess the potential health and safety risks that could disproportionately affect children, specifically related to air quality and noise.[16] The vulnerability criteria that are likely to be associated with air quality impacts from vehicular traffic include heart attacks and asthma. It is unclear if the traffic includes airplane traffic. Childhood asthma was exceeded in the EJ communities within the DGA of the project site. According to the DEIR, although outdoor air pollution could be a contributing factor, the air quality near the project site is improving and current levels are below the NAAQS that are protective of health effects such as asthma, with a margin of safety for protecting vulnerable population groups (e.g., children). The DEIR asserts that any project-related impacts will not contribute to an exceedance of these health-based standards. The DEIR states that there is little data to suggest that air quality is associated with the low-birth-weight criteria.

The DEIR states that the project is not expected to have disproportionate, adverse impacts on public health and on children's environmental health and safety, particularly nearby schools or camps. As noted, the FEIR should clarify the extent to which any proposed airport expansion will increase air and noise impacts in the surrounding neighborhoods. The FEIR should respond to comments requesting an update on efforts to clean up existing PFAS contamination near EJ neighborhoods.

[14] The DEIR includes discrepancies in the amount of impervious area that will be created (38.5 acres versus 40 acres).
[15] According to the DEIR, EPA's determination advances its *Lead Strategy to Reduce Lead Exposures and Disparities in U.S. Communities* aimed at reducing lead exposure in communities.
[16] In accordance with FAA's 1050.1F Desk Reference and Executive Order 13405, Protection of Children from Environmental Health Risks and Safety Risks.

Noise

The FAA is currently reviewing its noise policy to address aircraft noise.[17] As part of the review, FAA is looking at its current use of Day Night Average Sound Level (DNL) as the primary noise metric for assessing cumulative aircraft noise exposure; reviewing whether to continue to use the DNL 65 dB level as the metric and threshold for determining significant noise impacts in environmental reviews under the NEPA or the definition of the limit of residential land use compatibility; and considering if and how alternative noise metrics may be used in lieu of or in addition to DNL to better inform agency decisions and improve FAA's disclosure of noise impacts. As part of their engagement with the public and other stakeholders, the FAA issued a Federal Register Notice on May 1, 2023, seeking public comment on its Noise Policy Review (comment period open from May 1 to September 29, 2023). In September 2023, the Airport provided a notice to all airport stakeholders of FAA's current noise policy review and the solicitation of comments. The FAA received 4,857 comments from across the U.S. and is currently analyzing these comments to identify the range of input on noise metrics, noise thresholds, and other noise policy issues. This analysis will inform the development of any policy recommendations.

According to the DEIR, prior noise assessments at the Airport include a Federal Aviation Regulations (FAR) Part 150 Noise Study prepared in 1987 and approved by FAA in 1989, which was updated in 1998-99, resulting in additional practices being adopted. These studies analyzed existing and future noise levels at the Airport and in the vicinity resulting from aircraft operations and provided suggestions to reduce noise impacts, which are currently in effect as voluntary noise abatement flight procedures in good weather conditions. These procedures indicate priority runway use for noise abatement; identify known noise sensitive areas in the vicinity of the Airport; and provide optimum noise abatement arrival and departure paths for each runway. The procedures are to be followed unless otherwise directed by Air Traffic Control, or the pilot determines safety of the flight will be compromised (pilots are educated in these procedures via a handout and via airfield signage (also available on the Airport's website)). The Airport has established voluntary quiet hours between 10 PM and 6 AM, when airlines and GA operators are encouraged to limit their flights. In addition, training, touch-and-go and certification flights are prohibited without approval of the Airport.

The DEIR was required to respond to comments raised by the Town of Yarmouth and residents regarding existing and proposed aircraft noise including an aircraft noise analysis and noise mitigation. According to the DEIR, a detailed noise analysis was conducted in accordance with CFR Title 14, Part 150 with FAA-approved modeling software for predicting DNL impacts from airports. The DEIR states that under the current FAA noise policy, cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of the DNL (as opposed to single-event aircraft noise). The DEIR provides details regarding this noise analysis on existing and proposed conditions. FAA guidelines indicate that all land uses are normally compatible with DNL noise levels less than 65 dBA; commercial land use areas are compatible with DNL levels below 70 dBA.

Existing noise conditions surrounding the Airport have been documented through noise exposure maps that include annual DNL contours computed using FAA's model for aircraft flights using operations data from 2019 to establish existing conditions DNL contours. According to the DEIR, using 2019 data for the baseline noise analysis is a conservative approach as the operations numbers (67,350) were ±50% more than the number of operations in 2022 (34,190). Input data required for the noise model includes aircraft fleet mix, runway geometry, runway use, number and type of aircraft operations

[17] https://www.faa.gov/noisepolicyreview

(departures and arrivals) by aircraft type, and number of daytime (7 am to 10 pm) and nighttime (10 pm to 7 am) aircraft operations for a typical average annual day at the Airport. The 70, 65, and 60 DNL noise contours are shown in Figure 5.9-1 for the 2019 Existing Condition; the 70 dBA DNL contour is entirely within Airport property. The 65 dBA contour generally falls within the Airport property but slightly extends into commercial land use east of Yarmouth Road. According to the DEIR, these results indicate that the existing condition of land use surrounding the Airport is noise compatible. All residences are exposed to noise levels below a DNL of 65 dBA and all commercial facilities are below a DNL of 70 dBA as described by the FAA's Order 1050.1F.

The FAA model was used to assess future No Build conditions and generate DNL contours using future 2040 operations data developed in the MPU based on existing runway length conditions. Total operations forecasted for 2040 for all aircraft categories were 73,002, an increase of 5,652 operations, or 8.3% over the 2019 data (67,350). Of these, 5,564 were Touch and Go, accounting for 7.6% of Aircraft operations, a decrease of 1.6% from 2019 data (6,203). Based on the modeling, the 70 dBA DNL contour for the No Build condition is entirely within the Airport property (Figure 6.6-1) and the 65 dBA contour generally falls on Airport property but slightly extends into commercial land use across Yarmouth Road. According to the DEIR, the land use surrounding the Airport under the future No-Build Alternative is noise compatible as all residences are exposed to noise levels below a DNL of 65 dBA and all commercial facilities are below a DNL of 70 dBA as described by the FAA's Order 1050.1F. Under this scenario, no changes in the number of flights, flight patterns, aircraft types, or other factors that may affect noise would occur. Noise levels would be similar to current noise levels.

According to the DEIR, proposed projects are not anticipated to generate an increase in different aircraft operational activity at the Airport as operations are forecasted to increase regardless of the implementation of these projects (Table 1.4-3 Annual Operations Forecast by Type). Therefore, impacts to community noise levels are not expected. Based on the future runway conditions using the above referenced operations data, FAA modeling indicates that the 70 and 75 dBA DNL contours are entirely within the Airport property, while the 65 dBA contour generally falls on Airport property but slightly extends into the commercial land use across Yarmouth Road, similar to No Build conditions (Figure 6.6-2). According to the DEIR, the land use surrounding the Airport under the future Build condition is noise compatible as all residences are exposed to noise levels below a DNL of 65 dBA and all commercial facilities are below a DNL of 70 dBA as described by the FAA's Order 1050.1F. Under this scenario, noise levels would be similar to current noise levels. I note, however, that these projections do not appear to account for project components that explicitly expand capacity of the airport to accommodate future growth, including the addition of proposed hangars and potential terminal expansion. This expansion in capacity could induce further demand for airplane and vehicular travel and should be accounted for in a calculation of impacts.

Other than aircraft operations, the DEIR does not identify all noise-generating activities and components of the project. It briefly discusses FAA regulations or policies that apply to noise impacts of airport operations; it only states that project activities will adhere to MassDEP's Noise Pollution Policy at 310 CMR 7.10 but does not address this policy or the project's consistency with it. The DEIR does not discuss whether noise impacts are likely to disproportionately affect surrounding EJ neighborhoods or other vulnerable populations (including those that may be considered "sensitive receptor"). It states that the projects do not exceed FAA noise thresholds and no mitigation is required.

The DEIR does not analyze the mitigation recommendations in the Town of Yarmouth's comments on the ENF, such as implementation of a standard instrument departure procedure for

Runway 15 to provide a definite flight path and altitudes that minimize noise impacts on residential land uses southeast of the Airport. The DEIR states that the FAA prohibits restrictions from the Airport on flight paths, hours of operation and restricted access to airports; federal law prohibits restricting the route by which an aircraft has access to the airport to aid in noise abasement. However, the DEIR indicates that the Airport will consult with FAA and primary Airport air taxi operators such as Cape Air on flight path modifications that may serve to minimize noise impacts. The DEIR does not analyze aircraft noise impacts by showing contours for the 55 DNL through 80 DNL in five-level increments, as well as single-event contours for the same DNL increments as applicable to a range of aircraft types as requested by the Town of Yarmouth in its comments on the ENF. It also does not present these contours for existing flight routes commonly flown at the Airport on each of the four runway ends, and for any future flight path recommended for aircraft noise mitigation measures. The Town of Yarmouth's comments on the ENF noted that the intent of these single-event aircraft noise is to better reflect the aircraft noise impact that residents experience on a daily basis.

Land Alteration, Impervious Area and Stormwater

The DEIR provides an updated table (Table 3.5-1) which quantifies land alteration and impervious area associated with each project including the amount of alteration in previously undisturbed areas. Cumulative land impacts include 67.6 acres of temporary disturbance to grassed areas; 46.15 acres of existing vegetated areas being converted to impervious surface and removal of 6.65 acres of impervious area for a net increase in impervious area of 39.47 acres. Net impervious area includes 3.78 acres for work associated with TWY D/E; 3.25 acres to extend Runway 15-33; 5.2 acres to relocate/extend TWY B; 1.69 acres to extend TWY A; 17.3 acres for East Ramp Development; and 8.25 acres for North Ramp Development. The project will remove a substantial number of existing mature trees from the site and within areas of proposed easements, which will be acquired. Table 6.4-2 provides a summary of tree cutting impacts by area for Aeronautical Development at the East Ramp (6.11 acres) and TWY D and Runup Pad Relocation (2.54 acres) for a total of 8.65 acres of tree removal including 0.70 acres of shrub/shrub. Six acres of tree removal and 9 acres of impervious area are attributed with the additional of proposed new hangars. The DEIR briefly discusses opportunities to minimize land alteration and impervious area. Removal of 440 feet from the Runway 33 end will remove a significant amount of impervious area. The DEIR provides an evaluation of TWY D alternatives to reduce impacts to wetlands as discussed above.

According to the DEIR, the Airport includes 460 acres of undeveloped areas (72%) that might otherwise be developed if the Airport were not in operation. Approximately 410 acres of the Airport will remain undeveloped post-construction and includes 110 acres of dense forest north of Upper Gate Pond and Lewis Pond adjacent to the Hyannis Pond WMA, of which 37.5 acres is identified in the MPU as Non-Aeronautical Development Areas. According to the DEIR, any necessary tree removal will occur during time periods that minimize impacts to any potential Northern Long Ear Bat populations (Federally protected species) (i.e., outside of the summer roosting period (April through September).

Each of the projects will be designed to comply with the MassDEP Stormwater Management Standards (SMS); however, the DEIR does not include a Stormwater Report, which will be developed for future permitting. The DEIR includes a high level analysis of treating stormwater runoff from new taxiway and runway pavements; it does not discuss stormwater management associated with Aeronautical Development at the North and East Ramps.

Wetlands

The Barnstable Conservation Commission will review the project for its consistency with the Wetland Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00) and associated performance standards, including the SMS. According to the DEIR, impacts to wetland resource areas are associated with permanent fill from the relocation of TWY D and associated grading on Upper Gate Pond including 12,700 sf LUW, 4,600 sf of BVW, 300 lf of Bank and 3.8 acres of vegetated upland areas within the 200 feet of the pond. No other project components will impact wetland resource areas. The DEIR asserts that due to site constraints and FAA design requirements for airport geometry (400-foot separation), TWY D cannot be designed to fully avoid impacts to BVW. Impacts have been avoided and minimized to the maximum extent practicable through use of 2:1 side slope design with an engineered slope option. In addition, up to 5,200 cubic yards (cy) of excavation (dredge) of unconsolidated organic materials (i.e., "muck") along the pond bottom may be required to provide suitable base material for the taxiway slope. As part of the next phase of design, geotechnical engineers will further investigate this area to determine if excavation is recommended or if there are other options to adequately support the slope and meet FAA design criteria. Temporary impacts of 1,500 sf of BVW will involve a 5-foot horizontal area for construction access and work associated with TWY D; temporary impacts will be restored to pre-existing grades and seeded with a native wetland seed mix.

The DEIR provides updated wetlands calculations, including an updated summary table, which reflect the most recent design of the project and identifies temporary and permanent impacts to each wetland resource area and 200-foot buffer zone area. It describes how the project will comply with performance standards outlined in the WPA for each resource area. The DEIR includes analysis of an alternative to avoid impacts to wetland resource areas; however, this alternative was dismissed because it would not comply with FAA standards. The project will provide 4,600 sf of BVW replication in accordance with MassDEP's Inland Wetland Replication Guidelines, although it is unclear where this replication will be provided (i.e., on-site versus off-site). The FEIR should provide this information.

The project will require a 401 WQC from MassDEP due to the cumulative impacts to BVW and LUW. MassDEP will review the project for its consistency with Water Quality Regulations pursuant to 314 CMR 9.00. The DEIR provides information to describe cumulative impacts to "Waters of the Commonwealth" (BVW, Isolated Vegetated Wetland (IVW) and LUW) pursuant to 314 CMR 9.00 and identifies efforts to avoid, minimize, and mitigate impacts. The DEIR states that no impacts to federally jurisdictional IVWs are anticipated. As previously mentioned, up to 5,200 cy of proposed dredging will occur within upper Gate Pond as well as 4,600 sf of filling. The DEIR indicates that there is no practicable alternative available that has less adverse impact to the aquatic ecosystem based on the FAA standard that requires a 400-foot separation from Runway 15-33 and TWY D. As noted below, this issue should be further explored in the FEIR.

Cultural Resources

MHC comments on the ENF noted that the Airport contains two sites that are considered significant ancient Native American sites. No work is proposed at these archaeological site locations and as such, no impacts to these sites are anticipated. An Indian Trail site crosses north-south through the Airport property. Work areas in the vicinity of this former Indian Trail have previous heavy impacts related to the construction of the airfield and runways. The DEIR notes that preparation of an archaeological site avoidance and protection plan (ASAPP) in underway to describe how the archaeological sites will be protected and preserved from inadvertent construction-related impacts or

future land use impacts. The ASAPP will be submitted to MHC for its review and comment. The ASAPP will address pre-construction, construction and post-construction activities. Avoidance and protection measures will include installing high-visibility temporary fencing (i.e., orange construction fence) around and barring access to the two significant sites (sensitive cultural resource areas).

Water and Wastewater

According to the DEIR, the Airport was the first airport in Massachusetts to purchase the ecologic unit to eliminate the need to use foam during annual firefighting equipment testing.

As previously noted, the Airport is located over a Sole Source Aquifer that is a source of drinking water for Cape Cod. Therefore, proposed improvements will be subject to review under EPA's Sole Source Aquifer Protection Program. The DEIR provides information responsive to the *EPA Region 1 Sole Source Aquifer Project Review Information* document to allow EPA to determine whether project construction and operation have the potential to contaminate the underlying aquifer. It describes existing groundwater conditions, identifies surface water discharges (Figure 5.4-4), and describes the location of USTs. According to the DEIR, the Airport continues to monitor PFAS concentrations in groundwater at and downgradient of the capped areas to measure their effectiveness. These results are presented every six months in status reports submitted to MassDEP. Comments from EPA identify recommendations related to the analysis of groundwater/aquifer protection, public drinking water sources, chemical storage and use, spill prevention control, and stormwater management. These issues should be more fully addressed in the FEIR.

Climate Change

Adaptation and Resiliency

The DEIR contains an updated output report from the MA Climate Resilience Design Standards Tool (the "MA Resilience Design Tool"),[18] which notes the project has a high exposure based on the project's location for extreme precipitation (urban and riverine flooding) and extreme heat. Based on the 60-year useful life and the self-assessed criticality of the terminal building, the Tool recommends a planning horizon of 2070 and a return period associated with a 100-year (1% chance) storm event when designing this asset. Based on a 20-year useful life and self-assessed criticality of runway and taxiways, the Tool recommended a planning horizon of 2050 and a return period associated with a 10-year (10% chance) storm event. This recommendation appears to be based on a "Low" criticality assessment, which is understated given the critical functions served by airport operations for regional travel. The FEIR should adjust the planning horizon and user inputs to generate revised recommendations for the design of runways and taxiways.

The DEIR provides a discussion of the Airport's vulnerabilities to climate change. According to the Town of Barnstable 2022 Hazard Mitigation Plan Update, the Town is vulnerable to several natural hazards including flooding, high winds, winter or extreme weather, coastal erosion, sea level rise, wildfire, and climate change and ocean acidification; windstorms and severe winter weather were identified as particularly threatening to the Airport. The Airport is not located within a mapped floodplain and no flooding is anticipated. Although the project will remove 8.65 acres of trees and convert this land to pavement, the DEIR asserts that heat island effects are not anticipated based on large

[18] https://resilientma.org/rmat_home/designstandards/

areas of forested lands (110 acres) in the northern portion of the Airport.

The project may reduce climate risks by improving stormwater management systems, using onsite energy generation/storage via a microgrid, and using "green" construction standards for airport tenants. The DEIR proposes to offset carbon releases and loss of carbon sequestration resulting from the project with tree planting/replanting, and preservation of forested areas north of the airport. According to the DEIR, the Airport has initiated the development of a smart microgrid[19] in conjunction with the Cape Cod Transit Authority (CCTA) and MassDOT Aeronautics Division to provide a supplementary source of reliable power with energy storage to allow for flexibility in peak conditions and enhance resiliency and sustainable energy at the Airport. The DEIR maintains that the project is consistent with, and responds to future climate scenarios (e.g., heat impacts) by adding runway length to maintain safe aircraft operations. The State Hazard Mitigation and Climate Adaptation Plan (SHMCAP, 2018) notes that "high temperatures may also impact airplane operations. If the length of existing runways is not sufficient under higher temperature conditions, planes may not be able to take off when there is less lift available [and] high temperatures and dense air conditions could lead to increased runway length requirements for aircraft due to diminished performance in such conditions."

All new projects will be designed to meet MassDEP stormwater standards at the time of design. All current and future upgrades to the stormwater management system will be designed and sized to accommodate the 10-year storm events and peak precipitation values derived from the National Regional Climate Center (NRCC) for each rain event to account for the predicted increase in rainfall quantities and frequency for the region. A copy of the final Stormwater Report for each project will be provided to DEP during the design phase for each project.

Greenhouse Gas Emissions

This project is subject to review under the May 5, 2010, MEPA GHG Policy, which requires Proponents to quantify carbon dioxide (CO_2) emissions and identify measures to avoid, minimize or mitigate such emissions.

Stationary Sources

The ENF described proposed construction of a 30,000-sf terminal expansion, which required a GHG analysis in the DEIR; however, the DEIR indicates that the Airport does not plan to build any expansions or additions for at least five years, if at all. Any potential expansion would be proposed as passenger demand necessitates. According to the DEIR, the project may also propose a 20,000-sf building for storage of existing maintenance and snow removal equipment (SRE). There are no current architectural plans or designs to model for energy use at this time. In lieu of the preparation of a GHG model, the Proponent is committing to GHG mitigation identified below.

The Airport is located in Barnstable, which is not a Stretch Code community. However, the DEIR states that the Proponent will commit to implementing 2023 Stretch Energy Code[20] measures to support the Airport's decarbonization goals. According to comments from the Massachusetts

[19] The MassDOT Aeronautics Division received a $1.95 million grant from the U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) Program for planning of the microgrid at the Airport.
[20] https://www.mass.gov/info-details/stretch-energy-code-development-2022#final-code-language-for-stretch-code-update-and-new-specialized-stretch-code-

Department of Energy Resources (DOER), the DEIR was very responsive in committing to GHG mitigation measures and DOER has no further comments or recommendations as related to the terminal expansion component of the project. In addition to the terminal expansion, the Proponent is committing to the following series of GHG mitigation commitments for any new buildings, expansions, or additions, including the SRE:

- High performing envelope that complies with the 2023 Stretch Code envelope performance requirements
- 100% of building space heating will be provided by electric air source heat pumps
- Energy recovery ventilation per the 2023 Stretch Code update
- Electric domestic hot water heating (specific method to be determined) and heat pump domestic hot water heating will be analyzed
- Roof to be constructed solar photovoltaic (PV)-ready
- Install EV charging spaces (quantity to be determined but at minimum the number required by the 2023 Stretch Code)
- EV infrastructure for additional future EV-parking spaces to be installed (quantity to be determined)

The DEIR indicates that any new buildings, expansions, or additions including the terminal building and SRE will be constructed in accordance with C502.1 of the Stretch Code which requires application of prescriptive requirements of C401.3, C402 through C406, and Section C408 if less than 20,000-sf or in accordance with C401.2 Part 3, relative performance[21] if 20,000-sf or larger. Key mandatory sections in both pathways above include: C402.1.5 which establishes minimum, above-grade vertical envelope performance which cannot be "traded off" with other building improvements; C402.3 (solar readiness); C402.4 (revised fenestration performance of U-0.30/0.32); C402.5 (air leakage); C402.7 (thermal bridge derating); C403.5 (economizers); C403.7 (ventilation energy recovery); C405.13 (EV readiness); and C406 (additional energy efficiency).

The DEIR indicates that the project will comply with any future Energy Code Updates (beyond the 2023 Update) that occur prior to the commencement of proposed work. It states that specific GHG emissions reductions have not been quantified as there are no plans to conduct modeling, and DOER has indicated consent that the above commitments are sufficient to support an opt-out request in accordance with the MEPA GHG policy. Future terminal building enhancements are anticipated to be 100% electrically powered by the Airport's microgrid project which is currently in the planning phase and will use both battery storage and renewable energy sources (Airport's solar array). The Airport will reduce GHG emissions long-term by improving the energy efficiency of buildings on-site, evaluating the installation of solar canopies at the Airport parking lot, limiting idling by aircrafts, upgrading airport maintenance vehicles, requiring low sulfur diesel fuel use by contractors, and carrying out regular energy audits on on-site buildings. Upon completion of potential future buildings, additions, or expansions, the Proponent will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the building and will illustrate the degree of GHG emission reduction achieved. Details of the Proponent's implementation of operational measures will also be included in this certification.

The DEIR also identifies the ongoing GHG emissions commitments at the Airport including two

[21] which requires conformance with C401.3, C402.1.5, C402.2.8, C402.3, C402.4, C402.5, C402.6, C402.7, C403.5, C403.7, C405.2.4, C405.13, C406, C407.2, C408, and ASHRAE 90.1-2019 Appendix G (modified by C407.2)

solar fields occupying 25 acres of the site and producing 6.7 megawatts of energy to offset more than 5,000 metric tons of CO_2 emissions annually; eight EV charging stations in three parking lot locations; and roof-mounted solar arrays on two leased hangars.

The DEIR states additional information on implementation of electric aircraft charging stations is still preliminary; locations are identified on the Airport's terminal ramp but specific technologies would be identified as part of the newly awarded smart grid planning project. The microgrid will generate and distribute clean, reliable power, not only to the Airport, but for charging electric aircraft, and electric ground vehicles (including buses). The microgrid enhances the Airport's plans to implement electric aircraft charging infrastructure and pursue opportunities that are less reliant on external/conventional power sources. Phase I involves the study and planning of a microgrid placed at the Airport. Phase II will consist of funding to construct the microgrid infrastructure.

Mobile Sources / Air Quality

A mobile source emissions analysis was conducted to calculate the changes in CO_2 emissions as a result of the project and identifies potential reductions associated with improvements via TDM and other green initiatives at the Airport. An estimate of CO_2 emissions from mobile sources was calculated based on existing and estimated new trips, approximate distances traveled, and GHG emissions factors for vehicle trips. As with the traffic study, this calculation was provided based on the anticipated increase in vehicular trips only associated with the terminal expansion and did not account for any increase in airplane emissions associated with airport expansion. Potential reductions in mobile source CO_2 emissions may be achieved via TDM measures (e.g., subsidized bus passes, biking incentives). Direct emissions from transportation sources (e.g., fleet vehicles) are not included in the analysis because the Airport does not anticipate additional fleet vehicles as a result of the project.

The baseline condition is calculated from existing daily trips to the airport (472 vehicle trips). The project proposes a potential range of terminal building expansions in the future. In one scenario, the 100 peak hour passenger scenario for the terminal building would generate ±236 net new daily vehicle trips, which would increase annual CO_2 emissions by ±1,139 tons of CO_2 per year. The 150 peak hour passenger scenario for the terminal building would generate ±472 net new daily vehicle trips, which would increase annual CO2 emissions by ±2,279 tons of CO_2 per year (shown in Table 6-5.1).

Table 6.4-1 Mobile Source CO2 Emissions

	Daily Trips	Miles/Round Trip	VMT/Day	Annual VMT	Annual CO2 Emissions (tons/year)[8,9]	Increase in GHG over baseline
Existing (Baseline/No Build Condition)	472	30	14,160	5,168,400	2,279	
Vehicle Trips (Preferred Alternative -100 Peak Hour Passengers)	708	30	21,240	7,752,600	3,418	+1,139 tons/year
Vehicle Trips (Preferred Alternative -150 Peak Hour Passengers)	944	30	28,320	10,336,800	4,558	+2,279 tons/year

The Airport has committed to investigate several TDM strategies to reduce emissions from

mobile sources such as providing airport and tenant employees with subsidized public transportation options (e.g., reduced CCRTA bus passes). The Airport will provide employee facilities (lockers and changing areas) to increase employee trips to the Airport by walking or biking. The future microgrid infrastructure (currently in planning) will allow the Airport to achieve additional TDM strategies, not yet feasible, including adding EV vehicle and bus charging infrastructure using onsite generated and stored renewable energy. The future microgrid is a key component to promoting trips to the airport using zero emissions vehicles. Energy created from the smart grid would support electric ground vehicles, including buses, and in the future, electric aircraft. This project is on collaboration with the Airport and CCRTA to support the transportation options of the community living in the area. The Airport has committed to providing eight EV charging stations. As noted, the Airport has preliminary plans to provide power to facilitate electric aircraft charging and should commit to strong measures in this regard to support future electrification of airplanes. The FEIR should also provide revised air quality analysis to account for increased airplane traffic associated with future capacity expansion.

Land Alteration

The project will alter ±50 acres of land, which includes conversion of vegetation to impervious surface and grading. The DEIR identifies tree removal proposed on ±8.65 acres of the site which is forested and ±3 acres of it is shrub-dominated. The only currently foreseeable off-site impact may be associated with potential obstruction removal in a runway approach area and/or RPZ, which will be verified with a future tree-top canopy mapping effort. At this time, it does not appear that any off-site tree clearing is required. There is a very small amount in the Runway 33 approach which is located on airport property. Table 6.4-2 provide a summary of tree clearing impacts.

Table 6.4-2 Summary of Tree Cutting Impacts by Area

Project	Total Impacts	Tree Removal and Change to Pavement (acres)	Tree Removal with Vegetation Remaining (acres)	Brush/Shrub Removal and Change to Pavement (acres)	Proposed Work Components
Aeronautical Development (East Ramp)	6.11 ac (266,151 sf)	6.11 ac	0	0	Tree cutting and removal of vegetation for construction of future aircraft hangars
Taxiway D and Runup Pad Relocation	2.54 ac (80,150 sf)	0.96 ac	0.88 ac	~0.70 ac[a]	Tree cutting and removal within areas of proposed pavement - along Taxiway safety area and side slopes, tree removal area will be graded and restored to grass.
TOTAL	**8.65 ac (346,302 sf)**	**7.07 ac (307,969 sf)**	**0.88 ac (38,332)**	**0.70 ac (30,492 sf)**	

a) The Airport currently maintains vegetation around the areas of Upper Gate Pond and Lewis Pond within the Runway Visibility Zone to prevent trees from visually obstructing this area. The proposed Taxiway D will result in approximately 3 acres of this area comprised of a shrub layer to be graded and maintained as grass within the side slopes adjacent to Upper Gate Pond. For the purposes of this analysis, grasses and shrub layers are assumed to provide comparable levels of carbon sequestration, as grasses sequester carbon year-round without releasing it. Of the total area, approximately 0.70 acres will be converted from a brush/shrub layer to pavement.

In accordance with the GHG Policy, projects that alter over 50 acres of land are required to analyze the carbon loss associated with removal of trees and soil disturbance during the construction

period and loss of carbon sequestration. The purpose of this analysis is to develop an estimate, not an exact accounting of GHG emissions associated with land alteration, including removal of trees and release of sequestered carbon in soil. The DEIR describes the methodology for the analysis[22] and identifies associated impacts on GHG emissions. Table 6.4-3 provides estimates of carbon sequestration as a result of the project from tree removals within areas of the Airport being converted from forested area to pavement. The analysis estimates a loss to carbon sequestration of +6.52 metric tons (MT) Carbon in a year (14,374 lbs/year) and +195 MT Carbon over 30-year period.

Table 6.4-3 Carbon Sequestration Estimates

Project	Area of Tree Removal and Conversion to Non-vegetated Land (Pavement)	Carbon Sequestration by Acre Per Year (MTs) (a)(b)	Total Change in Carbon Sequestration (MT) (c)
Aeronautical Development Areas (East Ramp)	6.11 ac (266,151 sf)	-0.84 metric ton CO_2 acre/year	+5.13 MT Carbon/Year
Taxiway D and Runup Pad Relocation	1.66 ac (72,309 sf)	-0.84 metric ton CO_2 acre/year	+1.40 MT Carbon/Year
TOTAL	**7.77 ac (338,461 sf)**		**+6.52 MT Carbon/Year (14,374 lbs./Year) +195 MT Carbon over 30-Year Period**

1 Metric Ton (1.1 Short Tons) = 2,204 lbs.
A carbon sequestration factor was derived from EPA's estimate in *U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* of 0.57 metric tons of carbon sequestered per hectare per year (or 0.23 metric tons of carbon sequestered per acre per year). https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, 9/7/2023.
a. The negative value in this equation indicates carbon sequestration. A positive value indicates a loss in carbon sequestration.

Tree cutting also results in a one-time release of carbon emissions due to the release of carbon stored within above ground and below ground forest related carbon stores. The DEIR provides a quantitative analysis of one-time carbon releases from tree clearing activities based on the EPA's emissions estimates of carbon stores for 1 acre of forest land (83 MT of carbon per acre composed of five carbon pools (i.e., above ground biomass, below ground biomass, dead wood, litter, and soil carbon. The analysis uses 22.26 MT/Carbon/Acre) for the above ground forest biomass store of carbon to arrive at an estimate of up to 175 MT/Carbon released from carbon stores due to cutting. The DEIR maintains that harvested wood products will continue to contain some carbon (e.g., lumber).

The DEIR asserts that project-related carbon releases and loss in carbon sequestration are proposed to be offset from the Airport's undeveloped forested areas north of the airfield with ±110 acres of dense forest north of Upper Gate Pond and Lewis Pond, adjacent to the Hyannis Pond WMA (365 acres). Within the 110-acre area, ±37.5 acres is identified in the Master Plan/Airport Layout Plan as Non-Aeronautical Development Areas. Using the above factors for carbon sequestration (-0.84 MT/Carbon/Acre) the Airport's forest land within this area results in 92.40 MT of carbon sequestration per year. The Airport indicates that this will fully offset the GHG emissions associated with tree clearing. The FEIR should clarify how non-development of the specified areas will be enforced, and whether conservation restrictions (CRs) can be considered to ensure permanent protection. The FEIR should explore additional ways to directly mitigate the GHG emissions of land clearing, including through tree replanting efforts, reuse of felled wood, and CRs placed on conservation areas within EJ communities.

[22] A carbon sequestration factor was derived from EPA's estimate in *U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* of 0.57 metric tons of carbon sequestered per hectare per year (or 0.23 metric tons of carbon sequestered per acre per year). https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-andreferences, 9/7/2023.

Solid and Hazardous Waste

The DEIR states that the Proponent is not able to estimate volumes of solid waste to be generated by the project at this time. It does not describe handling, reuse, recycling and disposal of solid waste but indicates that these activities will be conducted in compliance with applicable laws and regulations.

The Airport includes disposal sites regulated by M.G.L. c. 21E, the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000) because releases of oil and hazardous materials (OHM) have occurred at the site. According to the DEIR, a total of 64 Sites with documented releases of OHM to soil and/or groundwater were identified on or adjacent to the Airport property, of which 13 Sites are adjacent to proposed activities as follows: TWY B (five Sites); TWY D (one Site); Runway 33 (two Sites); Aviation Development Area near TWY A (two Sites); Aviation Development Area near TWY B (one Site); and Proposed Electric Aircraft Charging Areas (two Sites). The DEIR discusses the Sites in relation to proposed or potential Airport improvements. It notes each project area will be evaluated independently, and as required, work will be performed in accordance with either the Preliminary or Comprehensive Response Actions of the MCP. It includes a plan that identifies the location of disposal sites and project elements (Figure 6.13-1).

The DEIR describes potential excavation or disturbance in disposal sites. It is estimated that up to ±200,000 cy of soil may be generated over the course of the various projects being executed and potentially contaminated soil or groundwater may be encountered. Excavation and management of soil contaminated with, or potentially contaminated with, OHM will be conducted in general accordance with Response Action Performance Standards (RAPS) (i.e., testing, disposal, mitigation, etc.) defined in the MCP. It is anticipated that excess soil or sediment will either be reused on-site during construction (especially PFAS-impacted soil due the limited options for offsite disposal), stockpiled in accordance with the MCP for future reuse, or transported offsite for reuse, recycling, or disposal. Stockpiled soils will be stabilized to minimize potential fugitive dust and include secondary containment to prevent sediment migration. While it is not expected that significant groundwater will be encountered as part of the project, if groundwater and surface water are encountered, they will either be treated and discharged to surface water in accordance with requirements of the NPDES DRGP, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal.

The Proponent is working with MassDEP to continue PFAS remediation at the site. The DEIR notes that an "Ecologic Cart" system is used to prevent the discharge of firefighting foam onto the ground surface during required testing of the foam. The DEIR does not specifically reference preparation of a Release Abatement Measure (RAM) Plan prior to construction for any of the proposed projects; instead, it generally notes that work will be performed under the Preliminary or Comprehensive Response Action provisions of the MCP, as applicable. It states that when development begins for TWY A and TWY B, MCP submittals will include a plan to sample and test disturbed soil in areas not previously sampled for PFAS and describe how PFAS-containing soils will be managed, if identified. The DEIR confirms that existing monitoring wells will be maintained for future assessment of groundwater for PFAS, 1,4-dioxane, and potentially other contaminants. Wells that cannot be maintained due to their location will be decommissioned and replaced, if necessary.

The DEIR identifies projects that may occur within areas where PFAS has been identified. The Airport currently routinely tests for 20 to 24 PFAS compounds which include the six PFAS compounds

currently regulated by MassDEP. Investigations are ongoing and status reports documenting response actions at the Airport are submitted to MassDEP Bureau of Waste Site Cleanup (BWSC) every six months. The DEIR addresses areas to be excavated that may contain soil or groundwater contaminated by PFAS. Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). A majority of the PFAS impacted soil within the two effected areas have been capped to reduce infiltration and groundwater impacts. The caps are inspected bi-annually to verify their effectiveness. The actual time for treatment will be based on collection of analytical samples for laboratory analysis. Groundwater monitoring beyond 2029 may be conducted at the Airport as part of an annual activity and use limitation (AUL) inspection or if plume concentrations have not dropped below the applicable GW-1 standard. Bi-annual reports will continue to be uploaded to MassDEP until a permanent solution can be obtained. According to the DEIR, the Town of Barnstable through the Hyannis Water System will continue to operate the Maher Wells treatment plant and provide drinking water that meets the regulatory drinking water standards. MassDEP periodically inspects the Maher Treatment plant under the water supply/drinking water program.

The MPU has developed an emergency response plan, which is discussed in the DEIR. The DEIR discusses generation of hazardous waste and/or waste oil at the Airport and identifies potential measures to reduce, recover and reuse hazardous waste. It identifies the Airport's Spill Prevention, Control, and Countermeasure (SPCC) Plan and regular maintenance of management facilities to address prevention and management of potential releases of OHM from pre- and post-construction activities.

Construction Period

Construction activities must be managed in accordance with applicable MassDEP regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). According to the DEIR, the selected contractor will apply relevant and practicable procedures to allow for the reuse and recycling of construction materials. A Construction Waste Management Plan (CWMP) will be developed to ensure the minimum amount of waste debris is disposed in landfills. Non-recyclable solid waste will be transported in covered trucks to an approved solid waste facility. The DEIR does not identify a percentage commitment for C&D recycling activities to divert waste from landfills, but states that the Airport ensures compliance with all regulations including 310 CMR 19.017 through the contracting process.

The DEIR generally describes construction period impacts and associated mitigation (listed in draft Section 61 Findings). The Airport will identify these impacts and proposed mitigation in greater detail relative to wetlands, stormwater, noise, air quality, water quality, and traffic commensurate with the commitments made in the DEIR. The DEIR does not specifically describe truck routes and other mitigation measures to minimize impacts to residential areas by trucks travelling to the site during the construction period. Construction period traffic will be managed to minimize off-airport impacts including coordination with the Town of Barnstable to discuss transportation-related impacts; designation of truck routes; police details; submission of a Construction Period Traffic Management Plan to the Town identifying designated truck routes and temporary roadway improvements to accommodate truck traffic while maintaining safe passage for all modes of travel; avoiding full or partial street closures to the extent possible (any partial street closures will be limited to off-peak hours); and parking for construction workers on-site, (parking will be prohibited along adjacent roadways). The Proponent will require use of equipment retrofitted with diesel emissions control devices and confirms

that Ultra Low Sulfur Diesel fuel will be used for trucks and construction equipment.

The Proponent is reminded that any contaminated material encountered during construction must be managed in accordance with the MCP and with prior notification to MassDEP. Each project component will develop a SWPPP in accordance with its NPDES CGP to manage stormwater during the construction period. The DEIR describes stormwater BMPs that will be implemented during construction; dewatering activities will be identified as part of permitting processes.

SCOPE

General

The FEIR should follow Section 11.07 of the MEPA regulations for outline and content and include the additional information and analyses required by this Scope. It should clearly demonstrate that the Proponent will pursue all feasible measures to avoid, minimize and mitigate Damage to the Environment to the maximum extent feasible.

Project Description and Permitting

The FEIR should describe any changes to the project since the filing of the DEIR. It should identify, describe, and assess the environmental impacts of any changes to the project that have occurred between the preparation of the DEIR and FEIR. The FEIR should also include an updated list of required Permits, Financial Assistance, and other state, local and federal approvals and provide an update on the status of each of these pending actions. It should also describe a mechanism for conducting more detailed reviews of future projects through the filing of NPCs. MEPA 01 MEPA 02

The FEIR should include plans of existing and proposed conditions at a legible scale that identify all major project components (existing and proposed buildings, access roadways, runways, taxiways, etc.), public areas, impervious areas, subsurface utilities, surface elevations, wetland resource areas, ownership of parcels including easements, and stormwater and utility infrastructure. Conceptual plans should be provided for on-site work as well as any proposed off-site work for transportation or utility improvements that will benefit the project. MEPA 03

The information and analyses identified in this Scope should be addressed within the main body of the FEIR and not in appendices. In general, appendices should be used only to provide raw data, such as drainage calculations, TSS removal rates, traffic counts, capacity analyses and energy modelling, etc. that are otherwise adequately summarized with text, tables, and figures within the main body of the FEIR. Information provided in appendices should be indexed with page numbers and separated by tabs, or, if provided in electronic format, include links to individual sections. Any references in the FEIR to materials provided in an appendix should include specific page numbers to facilitate review.

The FEIR should clarify whether the project itself is anticipated to, directly or indirectly, result in an increase in Airport operations and associated increase in airplane or jet activity. If so, the FEIR should explain the methodology used to quantify the projected increase in Airport operations. The FEIR should provide updated air quality, noise, and GHG emissions analyses that account for the forecasted increase in Airport operations. The FEIR should include all impacts associated with activities asserted to MEPA 04 MEPA 05 MEPA 06

qualify as "Replacement Project" and "Routine Maintenance" work for which no advisory ruling has been issued by the MEPA Office.

Alternatives Analysis

The objective of the MEPA review process is to provide disclosures of all feasible measures to avoid, minimize and mitigate Damage to the Environment. The Proponent should review the requirements in 314 CMR 9.06 and determine whether a practicable alternative is available that has less adverse impact to the aquatic ecosystem. Specifically, the alternatives analysis should include a thorough analysis to demonstrate why the separation distance (taxiway centerline to runway centerline) cannot be reduced from the recommended 400 feet for TWY D to decrease wetland impacts. The FEIR should identify the distance between Runway 15-33 and TWY D at which there would be no impacts to BVW, LUW and Bank. It should also review an alternative that minimizes impacts to wetland resource areas and identify the separation distance from Runway 15-33. MEPA 07 MEPA 08 MEPA 09

In the event impacts to wetlands cannot be justifiably avoided, the FEIR should propose appropriate mitigation measures to demonstrate consistency with the WQC regulations. It should identify the location of any proposed wetland replication. MEPA 10

The FEIR should include additional alternatives analysis for project components not discussed in the DEIR, including the hangar development in the North and East Ramps and other Phase 2 projects that were excluded from the DEIR. To the extent the Airport wishes to defer review of Phase 2 components, a procedure for review through the filing of NPCs should be proposed in the FEIR. The supplemental alternatives analysis should justify the need for hangar development, whether it is supported by current or future forecasted demand, and whether this increase in capacity will induce more demand for airplane and vehicular travel. The analysis should include a No Build Alternative, and also identify any alternative configurations or locations for proposed hangars and other development at the North and East Ramps that would avoid or minimize impacts to land alteration and impervious area. The alternatives analysis and project narrative should support the selection of the Preferred Alternative that includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable. MEPA 11 MEPA 12

Environmental Justice

The FEIR, or a summary thereof, should be distributed to the EJ Reference List that was used to provide notice of the DEIR. The Proponent should obtain a revised EJ Reference List from the MEPA Office to ensure that contact information is updated. The same efforts to notice the project should be made prior to the submission of the FEIR. The FEIR should provide an update on any outreach conducted since the filing of the DEIR, and identify any changes made to the project design in response to this outreach. MEPA 13 MEPA 14

The FEIR should respond to comments from the Sierra Club regarding unfair and inequitable burdens on EJ communities in the vicinity of the Airport, particularly as related to ongoing cleanup of PFAS contamination in the surrounding community. MEPA 15

As noted, while the DEIR indicates that several project components, such as new hangar space and terminal expansion, are intended to support future growth, it does not attribute any noise or air

quality increase in impacts (other than a modest increase in vehicular traffic) to this project, asserting that future growth would occur anyway with or without the project. This is not satisfactory, given that the DEIR unequivocally states that the project will increase capacity of Airport operations to support future expansions. The FEIR should clearly explain why an increase in infrastructure capacity, including hangar space, runway and taxiway extensions, and terminal expansion, should not be presumed to induce additional demand for airport operations, and should cite academic literature or other sources to support this explanation. Alternatively, the FEIR should present revised estimates of noise, traffic, and air quality/mobile source that include certain assumed increases from No Build to Build conditions as a result of the project components that are described as capacity expansions to support growth. Based on this assumed increase, the FEIR should update all conclusions relative to the extent of increased impacts and detail the extent to which each category impact is likely to impact surrounding EJ populations. The FEIR should consider additional mitigation measures to address noise and air quality impacts, including strong measures to support future electrification of aircraft and use of sustainable aviation fuels (SAFs) and noise abatement measures such as those suggested by the Town of Yarmouth. The FEIR should consider whether real-time data related to noise and air monitoring could be made available to the surrounding communities for added transparency. The FEIR should provide information regarding a Scope of Work to review potential modifications to Airport departure procedures including coordination with residents and EJ populations.

MEPA 16

MEPA 17

MEPA 18

MEPA 19

MEPA 20

Consistent with the Scope related to Climate Change and Land Alteration below, analysis of the stormwater management system should assess whether flooding risks may be exacerbated for nearby EJ Populations, including under future climate conditions, and whether existing conditions would be worsened or improved by the project design. The FEIR should update analyses related to air emissions and noise to account for the increase in airplane activity that is anticipated from the proposed hangar expansion or other work that may result in an increase in Airport capacity. As discussed below, the FEIR should provide all the information requested in the EPA comment letter as to anticipated impacts to groundwater and the SSA, including from stormwater, associated with the project. The FEIR should assess whether any increase in pollutant loading in groundwater is anticipated to impact the identified EJ Population based on the results of groundwater modeling or other analysis.

MEPA 21

MEPA 22

MEPA 23

Public Health / Sole Source Aquifer (SSA)

MEPA 24

The FEIR should fully address comments from EPA. As requested in EPA's comments, the FEIR should include a plan showing groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the project. The plan should detail the location of existing and proposed monitoring wells, public and private water supply wells, and surface water supply sources within five miles of the Project. The plan should be accompanied by a narrative to explain how groundwater contours were developed. The FEIR should provide additional hydrogeologic information as it relates to the flow of potential contaminants from the project, including from increased wastewater flows, stormwater discharges, and construction activities, and the potential impact, including groundwater flow continuing off-site, to existing or proposed public or private water supplies. Distances and time of travel (if times are readily available) to nearest water supplies should also be provided.

MEPA 25

MEPA 26

The FEIR should include a list describing the expected annual loading of potential contaminants of groundwater (as compared to baseline conditions at the Airport) from construction and project-related operations including information on fuel-related contaminants and loadings such as volatile organic compounds, metals, and polyaromatic hydrocarbons. It should provide a description of any past

contamination events at the airport along with baseline groundwater contaminant conditions. It should also include an expanded description of measures and best management practices to reduce the release of contaminants and provide aquifer protection during construction and airport operations, with a specific focus on how the Airport will protect groundwater from contaminated runoff, spills, or accidents at the airport.

The FEIR should include a monitoring plan that describes how and when soil and groundwater will be monitored for potential contaminants of concern and how baseline soil and groundwater contaminant conditions will be established. The monitoring plan should detail the frequency of sampling and how the sampling results, along with needed and executed response actions, will be shared with appropriate water department officials in the project area. MEPA 27

Land Alteration, Impervious Area and Stormwater

The Proponent should continue to evaluate opportunities to avoid and minimize land alteration and impervious area creation. The FEIR should further clarify how the project is designed to avoid and minimize land alteration and impervious area. It should provide a comprehensive evaluation of all measures to preserve open space and tree cover, to reduce the amount of land alteration, and to convert impervious areas to pervious materials, including reductions in pavement associated with runways and taxiways, reductions in size of aprons and hangars, and supplemental landscaping or tree planting to mitigate impacts associated with clearing. The DEIR notes that 410 acres of the Airport will remain undeveloped, of which 110 acres is densely forested. The FEIR should confirm the amount of open space that will remain undisturbed and/or restored upon completion of construction. It should include site plans that clearly locate and delineate areas proposed for development and those to be left undisturbed. The FEIR should indicate whether a CR could be considered for non-development areas of the airport, and how non-development commitments will be enforced. As the design for runway and taxiway modifications is finalized, the Proponent should identify any new areas where vegetated buffers can be maintained or re-established to protect nearby surface waters and incorporate these locations in landscaping and maintenance plans. MEPA 28 MEPA 29 MEPA 30 MEPA 31

The DEIR includes a high-level review of stormwater for several, not all, project components. The FEIR should provide a copy of the Stormwater Report for the project which identifies all measures that will be employed to protect the water quality of the SSA, describes the proposed stormwater management system for each project/phase, and identifies BMPs that will be incorporated into its design. It should describe how the proposed stormwater management system will fully comply with the SMS. The FEIR should provide details on the size, location, and design of proposed stormwater systems. The Airport should take all feasible measures to manage stormwater runoff, including by exceeding stormwater management standards and incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable; such measures should be described in the FEIR. Green infrastructure is an effective way to treat stormwater generated by impervious surfaces and provide cooling and other benefits for the community and should be incorporated to the maximum extent possible. LID designs should be carefully considered, and where not used, the FEIR should provide a thoughtful explanation as to why they are infeasible for implementation on-site. The FEIR should commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies. MEPA 32 MEPA 33 MEPA 34

As described further below, the FEIR should discuss how the stormwater management system will be designed to accommodate larger storm events. The FEIR should consult the rainfall volumes that MEPA 35

are provided by the MA Resilience Design Tool as indicative of future climate conditions and describe how the project will consider future conditions in design. It should include a plan showing the location of BMPs and describe whether sufficient space is being provided to allow for future retrofits as needed to accommodate large storms.

Climate Change

Adaptation and Resiliency

The FEIR should describe the precipitation data used for the design of the stormwater management system and clearly discuss how it will be sized to address future climate conditions. The MA Resilience Design Tool provides rainfall volumes associated with a 24-hour storm for the Project as input by the user. The FEIR should discuss whether the proposed stormwater design is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1 inches) from the Tool for the runway extension and taxiways. It should also discuss the 2070 100-year return period volume for aviation hangars and buildings (24-hour rainfall volume of 11.0 inches). Estimates can be provided in lieu of exact calculations, to the extent stormwater design is not advanced enough by the time of the DEIR. To the extent the project is unable to accommodate future year storm scenarios, the DEIR should discuss whether the project has engaged in flexible adaptative strategies, and whether current designs allow for future upgrades to be made to adapt to climate change. MEPA 36 MEPA 37 MEPA 38

Stationary Source GHG Emissions

Comments from DOER reference the proposed terminal expansion only and do not opine on any other expansions, new buildings, or additions, including the SRE. The FEIR should identify all proposed new buildings, expansions, or additions, including hangars that may be developed in the 20-year timeframe and discuss GHG commitments for these components. The Proponent should consult with the MEPA Office regarding the requirement to prepare separate GHG analyses for future new buildings, expansions, or additions, including the SRE. MEPA 39

Mobile Sources and Air Quality

The DEIR notes eight EV charging stations will be installed. The FEIR should commit to providing designated parking spaces for these vehicles. The DEIR states that information regarding implementation of electric aircraft charging stations is still preliminary. While locations are identified on the Airport's terminal ramp, specific technologies would be identified as part of the newly awarded smart grid planning project. The FEIR should provide an update regarding implementation of electric aircraft charging stations and implementation of conduits to facilitate future stations. It should provide a clear timeline for planning and construction of the microgrid infrastructure. It should include strong measures to facilitate a transition to electrification of airplanes and use of SAFs. For instance, the FEIR should consider whether conduits can be installed to facilitate electric charging stations for aircrafts. Any new infrastructure such as hangar spaces should be fully equipped with electric wiring and solar PV where feasible. The FEIR should describe how many aircraft charging stations will be proposed. MEPA 40 MEPA 41

Land Alteration

The FEIR should describe efforts to minimize tree and shrub clearing and land disturbance to the extent practicable and mitigate impacts when unavoidable. The FEIR should clearly explain the MEPA 42 MEPA 43

Proponent's plan for disposition of the trees cleared through the project, including the process for identifying potential markets for reuse of wood. The Proponent should commit to reuse of cleared trees for long-lived wood products to the greatest extent practicable and should indicate how the ultimate disposition of the trees will be tracked and documented. As noted, the use of CRs should be considered to ensure permanent protection of non-development areas. The FEIR should describe the proposed location of tree planting and the number of trees onsite or off-site in the Town of Barnstable. The FEIR should explore additional ways to directly mitigate the GHG emissions of land clearing, including through tree replanting efforts, reuse of felled wood, and CRs placed on conservation areas within EJ communities. MEPA 44 MEPA 45 MEPA 46

Solid and Hazardous Waste

As requested in EPA's comments, the FEIR should provide a list of chemicals used at the Airport, and a description of where and how they will be stored and managed on airport property. The list should be accompanied by a discussion of aircraft or vehicle maintenance practices/activities that can pollute runoff along with measures that will be implemented to reduce and control pollutants. MEPA 47

The Proponent should review MassDEP's comment letter for solid waste handling and disposal requirements. MassDEP comments reiterate that one or more RAM Plans or possibly a modified Phase IV Remedy Implementation Plan may be necessary for the various construction activities proposed in the DEIR. The FEIR should describe how the project will comply with all applicable requirements. The FEIR should confirm if a RAM Plan will be required under 310 CMR 40.0000 for any project activities based on review of proposed projects by a Licensed Site Professional (LSP). The Proponent and LSP should evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347. The Proponent and the LSP should work together to ensure that future RAMs for the airport construction activities do not exacerbate contamination. In particular, it should be demonstrated that any excavation of, or introduction of, soil beneath the caps will not exacerbate groundwater contamination. The Proponent should work with MassDEP to resolve any issues regarding PFAS before conducting any work for the project. The FEIR should provide a detailed response to comments from the Association to Preserve Cape Cod and the Sierra Club regarding PFAS contamination and further response actions. The FEIR should identify if the Proponent qualifies as a generator of hazardous waste and/or waste oil. MEPA 48 MEPA 49 MEPA 50 MEPA 51

Construction

I refer the Proponent to the comprehensive review of construction-period regulatory requirements in MassDEP's letter (i.e., air quality, idling, asbestos containing material (ACM), etc.). The FEIR should describe how the project will comply with all applicable requirements.

Mitigation and Draft Section 61 Findings

The FEIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Proponent to avoid, minimize and mitigate the environmental and related public health impacts of the project, and should include a separate section outlining mitigation commitments relative to EJ populations. The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments

should be provided in a tabular format organized by subject matter (traffic, water/wastewater, GHG, EJ, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project. The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing, either tying mitigation commitments to overall project square footage/phase or environmental impact thresholds, to ensure that adequate measures are in place to mitigate impacts associated with each development phase.

The FEIR should include a commitment to provide a GHG self-certification to the MEPA Office upon expansion of the terminal building signed by an appropriate professional indicating that all of the GHG mitigation measures, or equivalent measures that are designed to collectively achieve identified reductions in stationary source GHG emission and transportation-related measures, have been incorporated into the project. If equivalent measures are adopted, the project is encouraged to commit to achieving the same level of GHG emissions (i.e., "carbon footprint") identified in the Preferred Alternative expressed as a volumetric measure (tpy) in addition to a percentage GHG reduction from Base Case. The commitment to provide this self-certification in the manner outlined above should be incorporated into the draft Section 61 Findings included in the FEIR. MEPA 52

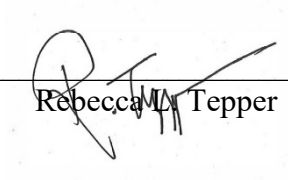
Responses to Comments

The FEIR should contain a copy of this Certificate and a copy of each comment letter received. To ensure that the issues raised by commenters are specifically addressed, the FEIR should include direct responses to comments to the extent they are within MEPA jurisdiction; references to a chapter or sections of the FEIR alone are not adequate and should only be used, with reference to specific page numbers, to support a direct response. This directive is not intended, and shall not be construed, to enlarge the scope of the FEIR beyond what has been expressly identified in this certificate.

Circulation

In accordance with 301 CMR 11.16, the Proponent should circulate the FEIR to those parties who commented on the ENF and DEIR, each Agency from which the project will seek Permits, Land Transfers or Financial Assistance, and to any other Agency or Person identified in the Scope. Pursuant to 301 CMR 11.16(5), the Proponent may circulate copies of the FEIR to commenters in a digital format (e.g., CD-ROM, USB drive) or post to an online website. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer to be distributed upon request on a first come, first served basis. The Proponent should send correspondence accompanying the digital copy or identifying the web address of the online version of the FEIR indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. A copy of the FEIR should be made available for review in the Barnstable and Yarmouth Public Libraries.

February 16, 2024
Date



Rebecca L. Tepper

Comments received:

12/15/2023 TJ Sully
01/22/2024 Diane LeDuc
02/02/2024 Association to Preserve Cape Cod, Inc. (APCC)
02/04/2024 Linda Bolliger, Hyannis Park Civic Association
02/07/2024 Betty Ludtke
02/07/2024 Massachusetts Department of Energy Resources (DOER)
02/07/2024 Galileo Faria
02/07/2024 Helyne Medeiros
02/08/2024 Walter Spokowski
02/09/2024 U.S. Environmental Protection Agency (EPA) New England – Region 1
02/09/2024 Cape Cod Commission
02/09/2024 Massachusetts Department of Environmental Protection (MassDEP) – Southeast Regional Office (SERO)
02/09/2024 Sierra Club – Cape and Islands Group
02/09/2024 Chris Greeley
02/09/2024 Thomas Collier
02/09/2024 Karen Ingemie

RLT/PPP/ppp

Patel, Purvi (EEA)

From: MEPA (EEA)
Sent: Thursday, December 28, 2023 12:46 PM
To: Patel, Purvi (EEA)
Subject: Fw: EEA #16440 Joint Draft Environmental Assessment/Environmental Impact Report (Draft EA/EIR), Hyannis, MA

I didn't see your name in the list of recipients for this comment. - Jen

---

From: tjsully46@comcast.net <tjsully46@comcast.net>
Sent: Friday, December 15, 2023 5:29 PM
To: MEPA (EEA) <mepa@mass.gov>; Corinne Snowdon <CSnowdon@epsilonassociates.com>
Cc: MEPA-EJ (EEA) <MEPA-EJ@mass.gov>; Boccadoro, Helena (DEP) <helena.boccadoro@mass.gov>; Zoto, George (DEP) <george.zoto@mass.gov>; Hobill, Jonathan (DEP) <jonathan.hobill@mass.gov>; MassDOT PPDU <massDOTPPDU@dot.state.ma.us>; cheryl.j.quaine@faa.gov <cheryl.j.quaine@faa.gov>; Mailloux, Colleen P (FAA) <Colleen.P.Mailloux@faa.gov>; jacobs.kira@epa.gov <jacobs.kira@epa.gov>; McConarty, Cindy (DOT) <Cindy.McConarty@dot.state.ma.us>; McKenna, Steve (EEA) <stephen.mckenna@mass.gov>; Ormond, Paul (ENE) <paul.ormond@mass.gov>; Schluter, Eve (FWE) <eve.schluter@mass.gov>; DeCarlo, Jeffrey (DOT) <Jeffrey.DeCarlo@dot.state.ma.us>; Matz, James B. (DOT) <James.B.Matz@dot.state.ma.us>; ksenatori@capecodcommission.org <ksenatori@capecodcommission.org>; regulatory@capecodcommission.org <regulatory@capecodcommission.org>; cynthia.lovell@town.barnstable.ma.us <cynthia.lovell@town.barnstable.ma.us>; darcy.karle@town.barnstable.ma.us <darcy.karle@town.barnstable.ma.us>; thomas.mckean@town.barnstable.ma.us <thomas.mckean@town.barnstable.ma.us>; Hans.Keijser@town.barnstable.ma.us <Hans.Keijser@town.barnstable.ma.us>; rwhritenour@yarmouth.ma.us <rwhritenour@yarmouth.ma.us>; kwilliams@yarmouth.ma.us <kwilliams@yarmouth.ma.us>; bdirienzo@yarmouth.ma.us <bdirienzo@yarmouth.ma.us>; jgardiner@yarmouth.ma.us <jgardiner@yarmouth.ma.us>; hpl_mail@clamsnet.org <hpl_mail@clamsnet.org>; jcain@yarmouth.ma.us <jcain@yarmouth.ma.us>; phalanpaul@gmail.com <phalanpaul@gmail.com>; sulkoskis@gmail.com <sulkoskis@gmail.com>; greeleyc@comcast.net <greeleyc@comcast.net>; bettyludtke@verizon.net <bettyludtke@verizon.net>; lisbuja@gmail.com <lisbuja@gmail.com>; Linda.bolliger0@gmail.com <Linda.bolliger0@gmail.com>; Maureen@ProducerToProducer.com <Maureen@ProducerToProducer.com>; richard.mikolajczak@gmail.com <richard.mikolajczak@gmail.com>; suza100@hotmail.com <suza100@hotmail.com>; sfbrita@gmail.com <sfbrita@gmail.com>; grassflowerknits@gmail.com <grassflowerknits@gmail.com>; timmermann.timothy@epa.gov <timmermann.timothy@epa.gov>; donald.w.englert@gmail.com <donald.w.englert@gmail.com>; be97@stanford.edu <be97@stanford.edu>; kareningemie@comcast.net <kareningemie@comcast.net>; gdoblebh@gmail.com <gdoblebh@gmail.com>; danielledolan@massriversalliance.org <danielledolan@massriversalliance.org>; juliablatt@massriversalliance.org <juliablatt@massriversalliance.org>; Elvis Mendez <elvis@n2nma.org>; ben@environmentmassachusetts.org <ben@environmentmassachusetts.org>; claire@uumassaction.org <claire@uumassaction.org>; cluppi@cleanwater.org <cluppi@cleanwater.org>; Deb Pasternak <deb.pasternak@sierraclub.org>; Heather Clish <hclish@outdoors.org>; Heidi Ricci <hricci@massaudubon.org>; kelly.boling@tpl.org <kelly.boling@tpl.org>; kerry@msaadapartners.com <kerry@msaadapartners.com>; ngoodman@environmentalleague.org <ngoodman@environmentalleague.org>; rob@oceanriver.org <rob@oceanriver.org>; robb@massland.org <robb@massland.org>; Staci Rubin <srubin@clf.org>; Sylvia Broude <sylvia@communityactionworks.org>; tribalcouncil@chappaquiddick-wampanoag.org <tribalcouncil@chappaquiddick-wampanoag.org>; crwritings@aol.com <crwritings@aol.com>; Peters, John (EOHLC) <john.peters@mass.gov>; acw1213@verizon.net <acw1213@verizon.net>; melissa@herringpondtribe.org <melissa@herringpondtribe.org>; rockerpatriciad@verizon.net <rockerpatriciad@verizon.net>; rhalsey <rhalsey@naicob.org>; Coradot@yahoo.com <Coradot@yahoo.com>; Solomon.Elizabeth@gmail.com <Solomon.Elizabeth@gmail.com>; thpo@wampanoagtribe-nsn.gov <thpo@wampanoagtribe-nsn.gov>; Brian.Weeden@mwtribe-nsn.gov <Brian.Weeden@mwtribe-nsn.gov>;

info@capecodclimate.org <info@capecodclimate.org>; info@cacci.cc <info@cacci.cc>; Maureen@ProducerToProducer.com <Maureen@ProducerToProducer.com>; Jacobs, Alyssa <ajacobs@epsilonassociates.com>; Nathan Rawding <nrawding@epsilonassociates.com>; Hiromi M. Hashimoto <hhashimoto@epsilonassociates.com>
Subject: Re: EEA #16440 Joint Draft Environmental Assessment/Environmental Impact Report (Draft EA/EIR), Hyannis, MA

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

This Report is a Complete Whitewash, Especially on the so-called Part 150 noise study. You can't do a Noise study from a Computer to get the effects of noise on the Residents. This Draft should be Rejected and the Gateway Airport be made to have a real part 150 study done. TS 01
The Ed e sd should be no runway extension or other construction at the airport until All ground water poll is Removed from the Airport. In fact, the Sirport should be Closed Permanently.
On Dec 15, 2023 at 2:38 PM -0500, Corinne Snowdon <CSnowdon@epsilonassociates.com>, wrote:

> Dear Secretary Tepper:
>
> On behalf of Cape Cod Gateway Airport Commission attached please find the EEA #16440 Joint Draft Environmental Assessment/Environmental Impact Report (Draft EA/EIR) for the Airport's Master Plan Improvement Projects in Hyannis, Massachusetts.
>
> **Please use this link to download a PDF of the Draft EA/EIR: https://epsilon.sharefile.com/d-s22ca345c5ebf47c28fcb65ee260e9682**
>
> Please notice the Draft EA/EIR in the Environmental Monitor to be published on December 22, 2023. We would like to request an extended Public Comment period through February 9, 2024, and would anticipate that the Certificate will be issued on February 16, 2024.
>
> By copy of this email, I am advising recipients of the Draft EA/EIR that written comments may be filed during the comment period, to:
>
> Rebecca L. Tepper, Secretary
> Executive Office of Energy and Environmental Affairs
> 100 Cambridge Street, Suite 900
> Boston, MA 02114
>
> You may also comment directly online at the MEPA's Web site: https://eeaonline.eea.state.ma.us/EEA/PublicComment/UI/searchcomment
>
> If you would like a paper copy of the document, please e-mail Corinne Snowdon at csnowdon@epsilonassociates.com.
>
> If there are any issues accessing the PDF, please let me know.
>
> Thank you,
> Corinne
>
> **Corinne A. Snowdon** | Production Manager

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3 Mill & Main Place, Suite 250
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978.897.7100 | 978.461.6239 (direct)
csnowdon@epsilonassociates.com

Patel, Purvi (EEA)

From: enviroHYA <enviroHYA@epsilonassociates.com>
Sent: Monday, January 22, 2024 2:39 PM
To: Diane LeDuc; enviroHYA
Cc: Diane LeDuc; Jacobs, Alyssa; Servis, Katie (KHYA); Patel, Purvi (EEA)
Subject: RE: CC Gateway Airport expansion plan

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Diane,

Thank you for your email. To help you navigate to the MEPA comment page, please use the following link to access the MEPA eMonitor home page: https://eeaonline.eea.state.ma.us/EEA/MEPA-eMonitor/home On the tabs on the top, you'll need to click on "Projects Under Review" and then again on "Environmental Impact Report". From there, you will then see Project #16640, Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan Projects. You can then click on "the comment button". See below for the screen capture showing you how to navigate the screen.

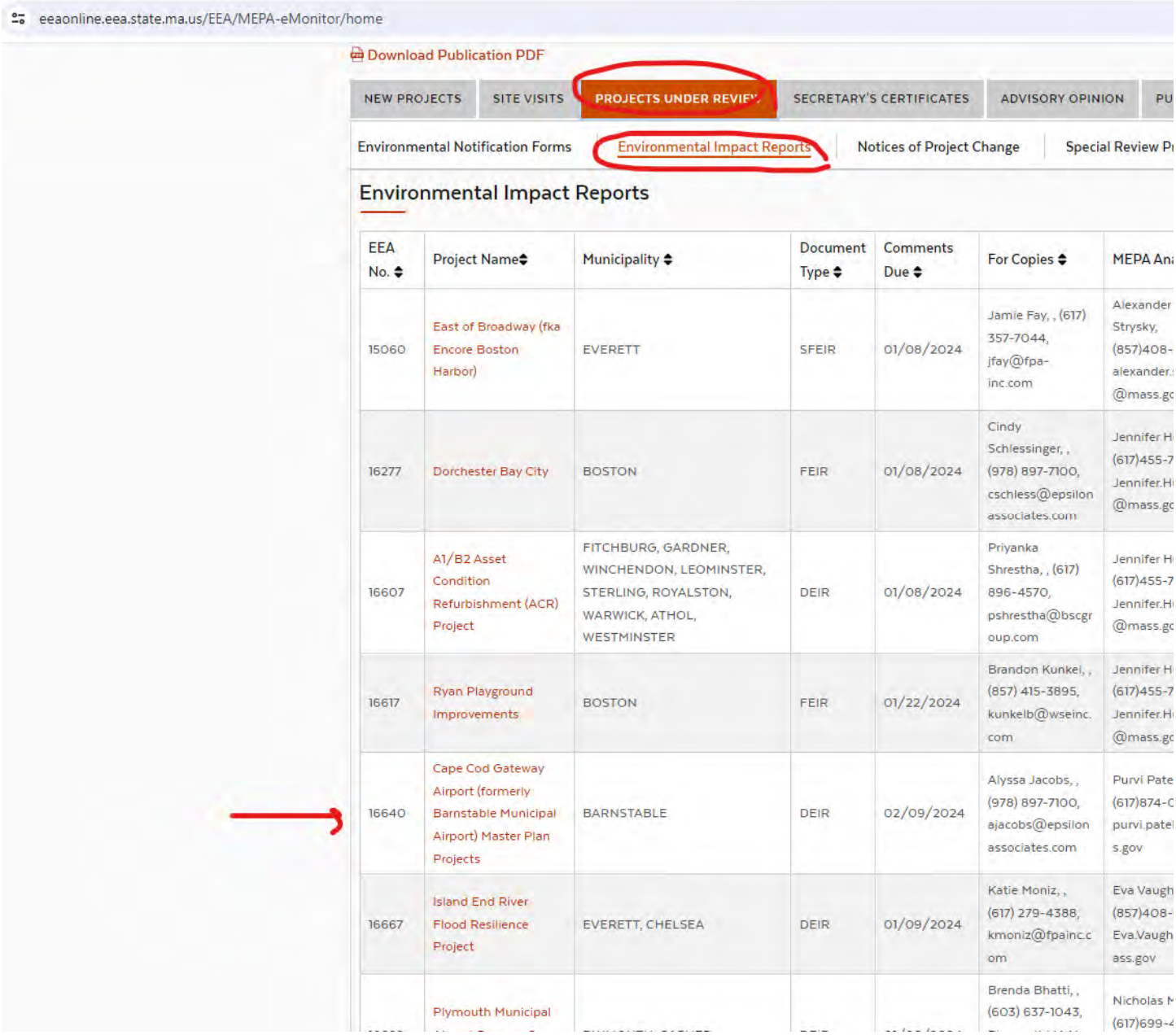
I've copied Purvi Patel, the MEPA Analysis for the project, (617)874-0668, purvi.patel@mass.gov, here as well, as you can send comments to her directly. Just make sure to include Project #16640 in the subject line. I also think she would be best to address you question about using the MEPA webpage, and ability to comment via the link provided.

Also, you can use the following link to learn more about how to provide MEPA a comment https://www.mass.gov/info-details/submitting-comments There are instructions for providing a comment be regular mail if that is preferred by you.

Lastly, we have already extended the comment period by an additional month beyond what would have been required.

Sincerely,

The HYA project team



Nathan Rawding
Senior Scientist, Ecological Sciences

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nrawding@epsilonassociates.com
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From: Diane LeDuc <capecodgreenenergy@gmail.com>
Sent: Friday, January 19, 2024 5:00 PM
To: enviroHYA <enviroHYA@epsilonassociates.com>
Cc: Diane LeDuc <dianejleduc@comcast.net>
Subject: CC Gateway Airport expansion plan

Greetings,
I've been trying to submit my comments about the Airport Expansion plan to the **.gov** site set up to receive comments but the "thinking wheel" just keeps spinning. I'd like to think that the site is on the verge of crashing because so many people want to submit their comments. I'm wondering if the deadline will be extended for submissions. Who gets to make that call?

I have several environmental scientist friends who wrote fantastic comments. I'm not a scientist. I'd like to take a "human touch" approach.

The airport in Hyannis should never have been built there. Expanding it is a ridiculous idea. It's become a fueling station for planes. Ridership has been, and continues to decline. The people who live near the airport are being poisoned by the soot and the chemicals that have migrated to their wells. The noise is awful too. The man in charge of the Airforce Base in Bourne has said he'd be open to a conversation about moving the operation there. DL 01 DL 02 DL 03

DL 04

I'm so sick of MONEY winning out over people's health that I could spit.

Please urge the decision makers to STOP and think about the big picture. **Money isn't everything**. I'm guessing that they don't actually need more money - they've just been programmed to seek more and more and more. Greed will be the death of us all and I mean that literally.

Thank you for allowing me the opportunity to express my feelings.

Sincerely,
Diane LeDuc
Harwich, MA

Andrew Gottlieb
Executive Director

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February 2, 2024

Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
Purvi Patel, EEA No. 16640
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Cape Cod Gateway Airport Master Plan Projects Draft Environmental Impact Report

Dear Secretary Tepper:

The Association to Preserve Cape Cod (APCC) has reviewed the Draft Environmental Impact Report (DEIR) for the Cape Cod Gateway Airport project (EEA # 16640) and submits the following comments.

Founded in 1968, APCC is the Cape region's leading nonprofit environmental advocacy and education organization, working for the adoption of laws, policies and programs that protect, preserve and restore Cape Cod's natural resources. APCC focuses our efforts on the protection of groundwater, surface water, and wetland resources, preservation of open space, the promotion of responsible, planned growth and the achievement of an environmental ethic.

APCC has focused our comments for this DEIR on the areas of wetland impacts, groundwater protection, and carbon sequestration mitigation related to proposed tree clearing.

<u>Wetland Impacts</u>

APCC is extremely concerned about the proposed significant impacts to Upper Gate Pond, which, according to MassGIS, is mapped by the Natural Heritage and Endangered Species Program as BioMap Core Habitat (Rare Species Core) and Critical Natural Landscape. According to the DEIR, a new Taxiway D would directly and permanently adversely impact Upper Gate Pond and its surrounding wetland buffer.

Wetland impacts include:

- Approximately 12,700 sf of Land Under Water (nearly a third of an acre) in the pond to be permanently filled.
- Approximately 4,600 sf of Bordering Vegetated Wetlands to be permanently filled.
- 3.78 acres of 200-ft. wetland buffer to be impacted by the construction of 1.13 acres of additional pavement.
- 0.1 acre of bordering vegetated wetland to be impacted by .01 acre of additional pavement.
- 1.85 acres of 100-ft. wetland buffer to be impacted by .52 acres of additional pavement.

The project applicant's preferred alternative includes either an engineered slope or a retaining wall that will be constructed within Upper Gate Pond to "minimize impacts" to the pond. A vegetated earthen berm would be constructed along the top of the pond slope in an attempt to prevent stormwater runoff from causing erosion. Given that the taxiway will fill in part of the pond and destroy portions of the 100 and 200 ft. wetland buffer, it is difficult to envision that the taxiway's extremely close proximity to what remains of the wetland after construction will not lead to increased stormwater impacts to the pond. AAPC 01

The DEIR states that there is the potential for up to 5,200 cubic yards of unconsolidated organic materials along the pond bottom to be excavated in order to provide suitable base material for the taxiway slope. Polycyclic aromatic hydrocarbons and lead are contaminants known to be present in Upper Gate Pond sediments, likely as a result of airport stormwater runoff. APCC recalls from airport projects in the previous decade, which required study of Upper Gate Pond and Lewis Pond, that the airport's environmental consultants determined it would be unwise to dredge the pond bottom in an attempt to remove contaminated sediments because it would release and distribute contaminants and further degrade pond water quality. APCC also questions whether releasing contaminants into the water body may impact groundwater. AAPC 02

The project applicant has proposed, in very general, non-specific terms, possible mitigation for the wetland impacts that includes potential wetland replication on airport property (with limitations on what is acceptable to FAA guidelines) and/or on a property or properties elsewhere in the town of Barnstable. The DEIR states that the mitigation "will be designed in the subsequent permitting phases of the project." Given the scarcity of detailed information regarding any specific proposed mitigation actions, it is APCC's position that the mitigation measures described in Section 7 of the DEIR are inadequate in relation to the substantial impacts created by the work proposed in and adjacent to Upper Gate Pond and its wetland buffer. It is impossible for the public to adequately review and comment on the AAPC 03

appropriateness of the mitigation for these significant wetland impacts if the mitigation plan is not provided in the MEPA review process.

Lastly, the applicant in the DEIR states, "Based on the proposed avoidance, minimization, and mitigation, in Section 6.1.5., there are no significant impacts on wetlands and surface water beyond the existing condition as a result of the Proposed Action." APCC completely rejects the suggestion that the impacts to Upper Gate Pond will not be significant. AAPC 04

Groundwater Protection

APCC would like to see more assurances in the next EIR filing that the airport project construction and operation will not adversely impact the underlying aquifer, which is a source of public drinking water. It has been well-documented that the airport is a source of PFAS contamination in groundwater that has impacted public drinking water supplies. The airport has taken steps to address PFAS contamination from the airport, including capping contaminated soil areas and conducting groundwater monitoring. To ensure continued remediation of existing PFAS contamination and to prevent additional contamination in the future, MassDEP should require, and the applicant should commit to, expanded sampling and monitoring of the airport property for the presence of PFAS and other contaminants, including within the proposed project area. AAPC 05 AAPC 06

Additionally, the project's future EIR filing should provide more detail about proposed stormwater management, and should describe where and how LID and green infrastructure will be utilized, and where and how conventional stormwater treatment will be used. Where conventional stormwater treatment is proposed, the applicant should explain in detail why more modern LID and green infrastructure approaches are not feasible. AAPC 07

Tree Removal Mitigation

The DEIR states that approximately 1.54 acres of forested upland areas and approximately 3.37 acres of shrub-scrub upland areas will be impacted for the construction of the airport project. The tree clearing will result in a loss of carbon sequestration estimated as equal to an increase of 6.52 metric tons of carbon per year, or 195 metric tons over a 30-year period. As proposed mitigation for this loss, the applicant claims that the carbon sequestration loss will be "offset" by the airport's existing forested areas north of the airfield.

APCC maintains that the above proposal is not appropriate mitigation for lost carbon sequestration. The existing forest is not adding new sequestration benefits lost by the planned tree cutting. No new sequestration value will be gained by maintaining the status quo of the remaining forested area. Existing forest does not replace the loss of cleared trees; it still results in a carbon sequestration deficit. The applicant should commit, at a minimum, to replacing the AAPC 08

number of trees that will be lost. Ideally, the sequestration value of new tree plantings should be calculated to confirm that an equal carbon sequestration value will be preserved by the replacements. A sapling will not provide the same current level of environmental benefit as a mature tree.

Conclusion

Based on the information provided in the DEIR, APCC must conclude that the objectionable loss of wetlands and critical habitat due to the filling of Upper Gate Pond and destruction of wetland buffer, combined with the absence of meaningful mitigation for the carbon sequestration loss due to tree removal, provide no path for the project, as currently proposed, to proceed and still be environmentally acceptable.

Thank you for the opportunity to provide comments on this proposed project.

Sincerely,

Andrew Gottlieb
Executive Director

TO: MEPA
FROM: Linda Bolliger, on behalf of Hyannis Park Civic Association
RE: Cape Cod Gateway Airport Master Plan EA/EIR Public Comment
DATE: February 2, 2024

The following comments are a compilation and distillation of the thoughts of the community of Yarmouth's Hyannis Park.

Hyannis Park is grateful for all the public meetings that Cape Cod Gateway Airport (CCGA) has afforded the public throughout the entire Master Plan process. The Environmental Assessment Phase has particular impact on our community due to our proximity to CCGA's operations. We recognize a long history of coexistence with the Airport; however, Master Plans by definition denote change. We welcome changes to the Airport's operation, but our acceptance ends at those changes which negatively affect our community's quality of life.

NOISE

Our community is pleased that CCGA has promised to consider flight procedures that circumvent our neighborhood. Noise has been the number one issue for the majority of Hyannis Park residents, since it universally affects neighbors. The regular interruption of our lives by low-flying aircraft either taking off or landing along current flight paths is incompatible with our coastal village way of life. The inability to leave windows or doors open may seem inconsequential. It is not. Furthermore, it is much more than inconvenient for all of us to curtail conversations on our porches and patios. It is a consistent life interruption for us. LB 01

Flight procedures in avoidance of residential areas is not an anomaly. In fact, many airports have these procedures in place. Let us not make CCGA an "unfriendly" airport and ignore the opportunity to be a good neighbor.

PFAS AND OTHER CONTAMINANTS

Complete clean-up of contamination of groundwater is critical especially to a community south-southeast (i.e., downgradient) of the CCGA like Hyannis Park. We understand the importance on various levels of forensic analysis regarding accountability. The existence of a second source at the former Barnstable Fire Training Academy complicates the accountability and ownership of clean-up for the Airport. Let us be clear—Hyannis Park requires (1) timely containment of *all* identified PFAS plumes, and (2) the timely remediation of contaminated groundwater and affected soil at the source and downgradient from both sources. This will entail a close and well-defined collaboration of CCGA and the former Barnstable Fire Training Academy. This appears to be currently lacking. Both sources need to demonstrate a complete, clean-up commitment to the public at large and Hyannis Park in particular. LB 02

Hyannis Park's Grist Mill Village which is made up of 44 homes along Mill Creek have had their 65-year historical way of life on the Creek abruptly upended. We are discouraged from swimming, fishing (other than catch and release), and shell-fishing in

our beloved river. This is no small wrinkle. This has been a way of life for many of us for 2+ generations. Grist Mill Village is frustrated over the knowledge that our river is contaminated with no possible remediation options on the horizon.

Scientists are predicting that this is just the beginning of an awakening for down-gradient communities like Hyannis Park. The acknowledgement of possible lead contamination and other yet unidentified contaminants are possible in the years ahead. The Airport's handling of PFAS is being closely watched as a prelude to further clean-up projects that will surely be part of its future.

PLANE EMISSIONS AND PUBIC HEALTH

With studies emerging from academic sources like Tufts University School of Engineering (see Hudda N, Durant LW, Fruin SA, Durant JL. Impacts of Aviation Emissions on Near-Airport Residential Air Quality. Environ Sci Technol. 2020 Jul 21;54(14):8580-8588. doi: 10.1021/acs.est.0c01859. Epub 2020 Jul 8. PMID: 32639745.), the next major concern is the effects of plane emissions on human populations under flight paths. This may not be on the Airport's list of concerns, but it certainly is included on Hyannis Park's. With a simple change in flight procedures, the Airport can put our communities concerns to rest.

LB 04

CONCLUSION

Hyannis Park will continue to press the Airport to minimize the impacts of its Master Plan by altering flight paths through the process of establishing "friendly" flight procedures circumventing our community. Hyannis Park wants to see the Airport adopt the recommendations provided by Mr. Ronald Price of QED Aviation. He is the Town of Yarmouth's consultant in matters of evaluating CCGA's Master Plan. We appreciate CCGA's open discussions with Mr. Price. But now is the time to adopt his recommendations into the Master Plan.

View Comment

Comment Details

EEA #/MEPA ID	First Name	Address Line 1	Organization
16640	Betty	--	--
Comments Submit Date	**Last Name**	**Address Line 2**	**Affiliation Description**
2-7-2024	Ludtke	--	Individual
Certificate Action Date	**Phone**	**State**	**Status**
2-9-2024	--	--	Opened
Reviewer	**Email**	**Zip Code**	
Purvi Patel, (617)874-0668, purvi.patel@mass.gov	bettyludtke@verizon.net	--	

Comment Title or Subject

Topic: Insuffucient Analysis

Comments

It would be one thing for Cape Cod Gateway Airport to only analyze themselves as they seek to enlarge their operation, but it is quite another for Mass DoT Aviation and the FAA to join in this effort. One only has to look at the alternatives analysis to see that the Cape Cod Gateway airport is completely encroached. The preferred alternative is the only viable alternative because of encroachment. Then what? What does Gateway do after this expansion? Build more ramp space to accommodate more corporate jets? What does the next 100 years look like?

The collective "you" need to study air service for Cape Cod and the Islands regionally. I read the Mass DoT Aviation and FAA documents regarding airport assets in Massachusetts. Neither entity, in their documents, has accounted for any of the assets at Joint Base Cape Cod. It is as if the airfield there does not exist. Perhaps there were good reasons to have done that when those documents were created, but there are no good reasons now. BL 01

In the alternative analysis provided for JBCC, included in this document, that absence of asset recognition continues even though the mission of JBCC has been drastically changed by BRAC actions. You discuss every obstacle you can muster and again rely on jurisdictional barriers owing to the structure of the Cape Cod Gateway airport as to why it is just "too difficult" to study airfield operations at JBCC. And when asked if you ever spoke with anyone at JBCC, you answered no.

I am not sure why you cannot bring yourselves to recognize how encroached Cape Cod Gateway Airport is. Just as I cannot understand why you won't even look at consolidating air operations at the largest airfield complex on Cape Cod. The proposed displaced threshold ought to provide some insight into the level of encroachment you face at Gateway Airport. There are viable alternatives to the Gateway expansion recommended in this study. Those have not been studied to the level required to make this Environmental Assessment adequate to the task.

Attachments

Update Status

Status

Opened

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COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
Telephone: 617-626-7300
Facsimile: 617-727-0030

Maura Healey
Governor

Kim Driscoll
Lt. Governor

Rebecca Tepper
Secretary

Elizabeth Mahony
Commissioner

23 January 2023

Rebecca Tepper, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: Cape Cod Gateway Airport, Hyannis, EEA #16640

Cc: Jo Ann Bodemer, Director of Energy Efficiency, Department of Energy Resources
Elizabeth Mahony, Commissioner, Department of Energy Resources

Dear Secretary Tepper:

We've reviewed the Draft Environmental Impact Report (DEIR) for the proposed project. The project includes construction of a 30,000-sf terminal expansion (this size may change). The project was very responsive to include GHG mitigation measures, which are summarized below. The DOER has no further comments or recommendations.

Key Commitments

The addition will be built to Stretch Code standards, available here: https://www.mass.gov/info-details/stretch-energy-code-development-2022#final-code-language-for-stretch-code-update-and-new-specialized-stretch-code- and will have efficient electrification of space heating with 100% heat pump space heating.

In summary:

- The addition will be built in accordance with C502.1 of the Stretch Code which requires:

  - If the addition is less than 20,000-sf, the prescriptive requirements of C401.3, C402 through C406, and Section C408 apply.

  - If the addition is 20,000-sf or larger, the addition shall be built in accordance with C401.2 Part 3, relative performance, which requires conformance with C401.3, C402.1.5, C402.2.8, C402.3, C402.4, C402.5, C402.6, C402.7, C403.5, C403.7, C405.2.4, C405.13, C406, C407.2, C408, and ASHRAE 90.1-2019 Appendix G (modified by C407.2).

- Key mandatory sections in both pathways above include:

  - C402.1.5 which establishes minimum, above-grade vertical envelope performance which cannot be "traded off" with other building improvements.

  - C402.3, solar readiness

  - C402.4, revised fenestration performance of U-0.30/0.32

  - C402.5, air leakage

  - C402.7, thermal bridge derating

  - C403.5, economizers

  - C403.7, ventilation energy recovery

  - C405.13, electric vehicle readiness

  - C406, additional energy efficiency

- 100% of building space heating will be provided by electric air source heat pumps.

Sincerely,

Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources

Energy & Environmental Affairs
(https://www.mass.gov/orgs/executive-office-of-energy-and-environmental-affairs)
Public Comments Portal

purvi.patel@mass.gov

View Comment

Comment Details

EEA #/MEPA ID	First Name	Address Line 1	Organization
16640	Galileo	621 Pitchers Way	Atlantic Aviation
Comments Submit Date	**Last Name**	**Address Line 2**	**Affiliation Description**
2-7-2024	Faria	--	Proponent
Certificate Action Date	**Phone**	**State**	**Status**
2-9-2024	--	MASSACHUSETTS	Accepted
Reviewer	**Email**	**Zip Code**	
Purvi Patel, (617)874-0668, purvi.patel@mass.gov	galileo.faria@atlanticaviation.com	02601	

Comment Title or Subject

Topic: Relocation of Cape Cod Gateway Airport to Otis Airforce Base

Comments

Segoe UI | 10 pt | Paragraph

I am a Atlantic Aviation employee who has worked and participated in multiple airport operations and development. I can not understand the idea behind relocating the Cape Cod Gateway Airport to Otis Airforce Base are multiple levels. Simply the cost of relocating the airport ranging from FAA grants, to private company's who operate within this airport would be so massive that I am not even sure how the Town could possible even entertain this idea. I understand and sympathy's with people who bring noise in the the picture as a influential topic to this debate, but I also struggle with how this argument is valid as they are simple shifting the issue to someone else, for this instance it would be the residents of Mashpee. I will certainly be participating in Town meets regarding this topic in the future and want to make it clear that I do not support the idea of relocating the Cape Cod Gateway Airport to Otis Airforce Base.

GF 01

Attachments

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Comment Details

EEA #/MEPA ID 16640	**First Name** Helyne	**Address Line 1** 63 Kerry Drive	**Organization** Atlantic Aviation
Comments Submit Date 2-7-2024	**Last Name** Medeiros	**Address Line 2** --	**Affiliation Description** Proponent
Certificate Action Date 2-9-2024	**Phone** --	**State** MASSACHUSETTS	**Status** Accepted
Reviewer Purvi Patel, (617)874-0668, purvi.patel@mass.gov	**Email** helyne.medeiros@atlanticaviation.com	**Zip Code** 02648	

Comment Title or Subject

Topic: Relocation of Cape Cod Gateway Airport to Otis Airforce Base

Comments

Segoe UI | 10 pt | Paragraph

In the argument of relocating the Cape Cod Gateway Airport to Otis Airforce Base I would like to give my opinion on why I believe it would be beneficial for the Airport to remain where it currently is. First I want make clear how important this airport is to our community ranging from life saving medical treatment with Med Flight which is conveniently located in the Center of Cape Cod to even the season economic commerce we all experience living here on Cape Cod. It is literally a gate way for people who want to visit Cape Cod for vacation or to see family. As well as I am not really sure how the Airport would be able to relocate when there is so much FAA grant money invested here as well as private business who exist sole on this airfield. I want to make it clear that I do not support the Cape Cod Gateway Airport relocating to Otis Airforce Base.

HM 01

Attachments

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EEA #/MEPA ID
16640

Comments Submit Date
2-8-2024

Certificate Action Date
2-9-2024

Reviewer
Purvi Patel, (617)874-0668, purvi.patel@mass.gov

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State
MASSACHUSETTS

Zip Code
02554

Organization
Marine Home Center

Affiliation Description
Proponent

Status
Opened

Comment Title or Subject

Topic: Support for Cape Cod Gateway Airport Master Plan

Comments

Segoe UI | 10 pt | Paragraph

WS 01

For several generations, the Cape Cod Gateway Airport (CCGA) has provided a crucial link in connecting Marine Home Center (MHC) operations on the islands with skilled, highly sought after workforce living in Barnstable County and the South Shore.

The Hyannis airport has become a true partner to the Cape's economic engine governed by a locally appointed Commission that balances both aviation needs *and* community impacts. The CCGA commitment to Aviation Safety is paramount, with continuous runway, navigation and environmental improvements. It's adoption of "Quiet Flying" is a first defense opportunity in mitigating the impacts to the population of Barnstable County. The CCGA's 20-year Master Plan represents a thoughtful and balanced approach to airport operations. Simply having a plan provides a valuable component to any long-term partnership.
Its location is absolutely critical to the viability of the MHC business model. Other methods simply do not work. The aviation department of MHC alone has invested over $6 million in the past year in operations upgrades.

Marine Home Center has demonstrated for over 40 years that the Hyannis airport is the *only* viable solution to its complex business model. It's commitment to safety, location, commuter access, reliability and environmental awareness make it the ideal partner for the future. - Walt Spokowski, President, Marine Home Center

Attachments

Update Status

Status

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REGION 1
BOSTON, MA 02109

February 9, 2024

Cheryl Quaine
Federal Aviation Administration
New England Division
12 New England Executive Park
Burlington, MA 01803

Rebecca L. Tepper, Secretary
Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: EPA comments on the Draft Environmental Assessment and Draft Environmental Impact Report (EEA File Number: 16640) for the Cape Cod Gateway Airport, Hyannis, Massachusetts

Dear Secretary Tepper and Ms. Quaine:

We are writing in response to the Draft Environmental Assessment (EA) and Draft Environmental Impact Report (DEIR) for the Cape Cod Gateway Municipal Airport project located in the Town of Hyannis, Massachusetts. We submit the following comments on the EA/DEIR in accordance with our responsibilities under the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act, and the Safe Drinking Water Act.

The EA/DEIR describes several capital improvement projects at the Cape Cod Gateway Municipal Airport that will be completed in the next five to seven years. The proposed projects are intended to meet facility requirements, enhance safety and efficiency of the airfield, and achieve compliance with Federal Aviation Administration ("FAA") standards (FAA AC 150/5300-13B, Airport Design). The report states that the proposed projects are based on the recent 2022 Airport Master Plan (AMP) and Airport Layout Plan (ALP). The proposed project includes extension of Runway 15, modification of taxiways A, B and D, construction of a run-up area and noise wall, removal of Taxiway E, and aeronautical development within the North and East ramp areas.

EPA reviewed the EA/DEIR and offers the following comments and recommendations related to the analysis of groundwater/aquifer protection, public drinking water sources, chemical storage and use, spill prevention control, and stormwater management. We request that these issues be more fully addressed in the final EA/EIR for the project.

Cape Cod Sole Source Aquifer

The Cape Cod Gateway Municipal Airport project is located over the Cape Cod Sole Source Aquifer. EPA's review of the EA/DEIR focused primarily on the project's potential to impact the underlying aquifer pursuant to our responsibilities under Section 1424 (e) of The Safe Drinking Water Act (SDWA). The SDWA provides EPA discretionary authority to review federally funded projects within Sole Source Aquifers. In this case, a portion of the funding for the project is being supplied by the Federal Aviation Administration. The Cape Cod Sole Source Aquifer was designated on July 13, 1982 (Federal Register Notice: 47 FR 30282 also see https://www3.epa.gov/region1/eco/drinkwater/capecod.html)

The Cape Cod Aquifer provides 100% of the Cape's drinking water, and its highly permeable aquifer deposits make it one of the most productive groundwater systems in New England. These water supplies are susceptible to contamination from development and land uses within their watersheds. Based on previous groundwater investigations, groundwater flows in a southeasterly direction from the airport towards Lewis Bay. Nearly the entire airport and most of the land area between Route 132, Route 6, and Yarmouth Road, is situated within a zone of groundwater contribution to public water supplies.

Based on our review we found that the EA/DEIR lacks sufficient information to fully assess the potential for groundwater impacts associated with the project. The comments and recommendations in this letter highlight the information necessary to support conclusions regarding potential impacts to groundwater.

EPA intends to review the responses provided to our comments in the final EA/EIR to determine if additional information is required to understand potential impacts to groundwater or if any follow-up groundwater assessment is recommended. We encourage the airport and the FAA to coordinate with us directly during the preparation of the final EA for any clarification regarding our recommendations.

Public and Private Drinking Water Sources and Coordination with Water Systems

The airport has been a source of contamination in the past. One example of many provided in the EA/DEIR highlights numerous contaminants discovered in the soil and groundwater:

Barnstable Municipal Airport, Hanger Bay #1 RTN: 4-12048: Airline Realty Trust submitted a DPS for releases of chlorinated solvents and petroleum compounds to soil and groundwater. The release was attributed to several upgradient sources including leaching pits at the Cape Air Hanger and Griffin Air, and jet fuel contamination associated with former USTs. This RTN was linked to RTN 4-823 in October 1997. RTN 4-823 was associated with releases at the Cape Air Hanger and response actions included disposal of petroleum containing liquid and solids from leaching pits, installation of a soil vapor extraction and air sparging system to treat petroleum-contaminated soil and groundwater, additional soil and groundwater sampling, and injection of remedial additives to treat the chlorinated solvents and petroleum compounds.

PFAS contamination of groundwater is highlighted in the EA/DEIR as a significant issue associated with both on-airport and off-airport sources. Currently known on-airport sources include the aircraft rescue and firefighting/snow removal equipment (ARFF/SRE) building and deployment area. EPA

acknowledges that the airport is working closely with MassDEP's Waste Site Cleanup program to remediate existing contamination and to install institutional controls.

Public Water Sources

As discussed in the EA/DEIR, public drinking water wells are located to the north and east of the airport. The Maher Wellfield is located approximately 0.1 miles southeast of the airport and consists of three production wells that supply approximately 30 to 35 percent of the Town of Barnstable's Water Supply Division service connections in Hyannis and Hyannis Port. The Maher Wellfield has been contaminated by numerous contaminants as described in chapter 5 of the EA/DEIR.

Existing wells proximate to the airport are operated by the Barnstable Water Company and the Barnstable Fire District. Additional wells operated by the Yarmouth Water Department are located east of Willow Street in Yarmouth. The report also described potential future well locations, including two locations leased by the airport to the Barnstable Water Company, and two locations on airport property that are identified as future well sites on the Town of Barnstable's zoning map. It is imperative that current and future water supplies be protected. Barnstable is a highly developed community and the ability to locate new water supplies is severely limited.

MassDEP regulations protect both Zone I and Zone II of public water supplies. The Zone I area is a protective area – usually a 400-foot radius - which must be owned or controlled by the public water supplier. Zone II protection is provided through local wellhead protection zoning, passed by cities and towns under impetus from MassDEP.

As outlined in the EA/DEIR, the airport is located within wellhead protection areas which underly the entire airport property. Areas within Zone II reflect areas of highest sensitivity due to their direct connection to existing drinking water supplies. In addition, Barnstable has adopted local regulations which impose stronger restrictions on the five-year "time of travel" area for the aquifer. The Barnstable Groundwater Protection Overlay District is referred to under local zoning as the Wellhead Protection (WP) Overlay District. EPA 01

Recommendation:

- EPA recommends that the final EA/EIR provide more information about how the Airport plans to meet the restrictions required in the Barnstable WP Overlay District.

Aquifer Protection

As noted above, the airport is located within the wellhead protection areas (Zone II areas) of several public drinking water supply wells. Wellhead protection areas represent the land area where rain soaks into the ground, enters groundwater, and flows to one of the wells. EPA has concerns about construction and operation impacts associated with the proposed projects at the airport and whether any of the proposed work will conflict with any of the on-site cleanups currently in progress and overseen by the Massachusetts Department of Environmental Protection (MassDEP).

Recommendations:

- EPA recommends that the groundwater section of the final EA/EIR be expanded to provide additional hydrogeologic information as it relates to the flow of potential contaminants from construction and operation of the proposed project and the potential impact, including groundwater flow continuing off-site, to existing or proposed public or private water supplies. We recommend that distances and time of travel (if times are readily available) to nearest water supplies be provided. We also recommend that the EA describe past and proposed future coordination with public water supply systems regarding drinking water resources. EPA 02

- We recommend that the EA/DEIR be expanded to fully support any conclusions reached regarding direct or cumulative groundwater impacts to include the following: EPA 03

    - A map showing groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the proposed project. Please show the location of existing and proposed monitoring wells and include a narrative to explain how groundwater contours were developed. We recommend that the locations of public and private water supply wells and surface water supply sources within 5 miles of the proposed project be included in the maps.

    - A list describing the expected annual loading of potential contaminants to groundwater (as compared to baseline conditions at the airport—see below) from construction and project-related operations including information on fuel-related contaminants and loadings such as volatile organic compounds, metals, and polyaromatic hydrocarbons.

    - A description of baseline groundwater contaminant conditions.

    - An expanded description of measures and best management practices to reduce the release of contaminants and provide aquifer protection during construction and airport operations. We specifically recommend additional detail regarding how the airport will protect groundwater from contaminated runoff, spills, or accidents at the airport.

Chemical Storage and Use

Recommendations:

- We recommend that the final EA/EIR provide a list of chemicals and de-icing products used at the airport, and a description of where and how they will be stored and managed on airport property. A full discussion of aircraft or vehicle maintenance practices/activities that can pollute runoff along with measures that will be implemented to reduce and control pollutants is recommended. EPA 04

- We also recommend that the final EA/EIR include a list of past and current firefighting foam products (which might contain per- and polyfluoroalkyl substances PFAS/PFOA/PFOS) which will be used in association with the proposed project. EPA 05

Monitoring Plan

Recommendations:

- We recommend that the final EA/EIR consider the development of multi-media monitoring as a means of determining the effectiveness of pollution prevention measures aimed at preventing or minimizing the potential for the proposed project to contaminate the aquifer. We request that the final EA/EIR include a monitoring plan that describes how and when soil and groundwater will be monitored for potential contaminants of concern and how baseline soil and groundwater contaminant conditions will be established. We recommend that the monitoring plan detail the frequency of sampling and how the sampling results, along with needed and executed response actions, will be shared with appropriate water department officials in the project area. We recommend annual reporting. EPA 06

Spill Prevention Control and Countermeasure Plan

Recommendation:

- Given the location of the proposed project above a Sole Source Aquifer, EPA recommends that the airport's Spill Prevention, Control and Countermeasure (SPCC) Plan be updated prior to construction to account for all aspects of the proposed project's construction and operations. The current plan (Revision 4) is dated 2020. EPA 07

For more specific information about requirements with the SPCC rule, refer to *www.epa.gov/oil-spills-prevention-and-preparedness-regulations/spill-prevention-control-and-countermeasure-19.* Please direct questions regarding the SPCC rule to EPA's Joe Canzano at canzano.joseph@epa.gov or 617-918-1763.

Stormwater Management

The NPDES Construction General Permit (CGP) authorizes stormwater discharges from construction activities that result in a total land disturbance of equal to or greater than one acre, where those discharges enter Waters of the U.S. or a municipal separate storm sewer system (MS4) leading to Waters of the U.S. subject to the conditions set forth in the CGP. As noted in the EA/DEIR, compliance with the CGP is required.

The EA/DEIR notes that the airport maintains a Stormwater Pollution Prevention Plan (SWPPP) in accordance with EPA's National Pollutant Discharge Elimination System (NPDES) Stormwater Multi-Sector General Permit (MSGP) issued on January 15, 2021 (Airport NPDES ID MAR 053164, see Appendix F). The majority of stormwater collected on impervious surfaces at the airport is managed through a network of 300 catch basins discharging to surface water outfalls, seven bioretention basins which discharge to infiltration basins, vegetated swales, and Class V injections wells (see below for more information about Class V well requirements).

The report states that the majority of Airport property is pervious vegetated airfield surfaces in areas characterized by little to no potential for potential pollutants to be exposed to stormwater.

Recommendation:

- We recommend that the final EA/EIR provide additional detail to explain why there is only limited potential for pollutants to be exposed to stormwater. EPA 08

The EA/DEIR describes oversight of erosion and sediment controls to mitigate the impacts of proposed construction. Stormwater from a portion of the airport may be discharged near the Maher Wellfield, which is located near the intersection of Route 28 and Yarmouth Road.

Recommendation:

- EPA recommends that the airport's erosion and sediment control plan, including stormwater runoff controls and Best Management Practices (BMPs) include consideration of groundwater resources at the site, and adjacent public drinking water supply wells. The final EA/EIR should detail any necessary changes to reflect this focus and include a description of monitoring wells and advanced stormwater BMPs needed for spill control. We also recommend that all stormwater BMPs described include a description of pretreatment capabilities as required by Massachusetts stormwater requirements. EPA 09

The EA/DEIR states that the proposed stormwater design will treat stormwater using a combination of BMPs. The current stormwater BMPs rely on the Vortech system, a below-ground, engineered stormwater treatment device that combines swirl concentration and flow controls into a single treatment unit. As discussed in the report, Vortech is used for capturing and retaining trash, debris, sediment, and hydrocarbons from stormwater runoff. Stormwater technologies can be very effective but need to be maintained adequately.

Recommendation:

- EPA requests more information about the proposed BMPs that will be developed for the airport, and regarding the operations and maintenance of the Vortech system. Also, given the location of the proposed project above a Sole Source Aquifer, EPA encourages the use of monitoring wells. EPA 10

Underground Injection Control

EPA's Underground Injection Control (UIC) program is administered by MassDEP and, as such, UIC systems are regulated by MassDEP. Infiltration best management practices used to drain stormwater runoff or other wastewater are regulated as "Class V" underground injection wells under Massachusetts UIC regulations (310 CMR 27.02) if they include any of the following:

- a bored, drilled, or driven shaft, a dug hole, or seepage pit whose depth is greater than its largest surface dimension; or,

- an improved sinkhole; or,
- any subsurface structure that has a soil absorption system (SAS) with a subsurface fluid distribution line and aggregate. Note: This refers to subsurface infiltration enhancement systems but does not include underdrains designed to collect and convey stormwater to a surface outfall or a storm drain network.

Any new UIC wells need to be approved by MassDEP. MassDEP needs a UIC registration application with the required UIC Stormwater Technical Compliance Form, site plans, and cross-sectional plans showing the proposed UIC well structures. For more information, please contact: EPA 11

Joe Cerutti
MassDEP Drinking Water Program
UIC Program Coordinator
joseph.cerutti@mass.gov
781-465-4123

Please contact us during the development of the final EA/EIR for clarification of any of the comments and recommendations provided above. EPA requests the opportunity to be kept informed about any activities that might affect the Sole Source Aquifer during project design, construction, or operation. Please communicate directly with the EPA Region 1 Sole Source Aquifer Coordinator, Kira Jacobs. She can be reached at jacobs.kira@epa.gov or 617-918-1817.

Sincerely,

Timothy Timmermann, Director
Office of Environmental Review

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BARNSTABLE, MASSACHUSETTS 02630

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CAPE COD COMMISSION

Via Email

February 9, 2024
Rebecca Tepper, Secretary of Energy and Environmental Affairs
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office, Purvi Patel, Environmental Analyst
100 Cambridge Street, Suite 900, Boston, MA 02114

Re: Draft Environmental Impact Report
EEA No. 16640 (Cape Cod Commission File No. 22033)
Cape Cod Gateway Airport Master Plan Projects, Barnstable

Dear Secretary Tepper:

Thank you for the opportunity to provide comments on the above-referenced Draft Environmental Impact Report ("DEIR"). Because this Project requires an Environmental Impact Report ("EIR"), it is deemed a Development of Regional Impact ("DRI") under § 12(i) of the Cape Cod Commission Act, c. 716 of the Acts of 1989. Cape Cod Commission staff previously submitted comments on this Project's 2022 ENF. We offer the following additional suggestions as Cape Cod Gateway Airport ("the Applicant") completes the MEPA process and prepares for DRI review.

The Cape Cod Gateway Airport 2022 Master Plan proposes multiple improvements to be completed in three phases over 20 years. This DEIR encompasses the improvements anticipated to receive funding within the next five to seven years, including extending runway 15-33, modifying taxiways A, B, and D, removing taxiway E, constructing a run-up area and noise wall, and new hangar development ("the Project"). Our comment letter on the ENF highlighted the amount of new land alteration, increased impervious surfaces, wetlands disturbance, and vegetation clearing associated with construction as areas of concern. We encouraged the Applicant to assess design alternatives to minimize negative impacts to natural resources while fulfilling applicable Federal Aviation Administration ("FAA") requirements.

The DEIR includes a detailed alternatives analysis and some beneficial modifications, such as a decrease in the total acreage of new land alteration—from approximately 63 acres in the ENF to

CCC 01

less than 50 as currently proposed. The Applicant should continue assessing any alternatives that might be less detrimental to sensitive resources.

The proposed Taxiway D relocation will involve earthwork and construction of paved surfaces in Upper Gate Pond's buffer, impacting surface waters, wetlands and NHESP BioMap Core Habitat and Critical Natural Landscape areas. Over time, stormwater runoff, debris, and frequent nearby vegetation management have decreased this pond's habitat function and contaminated its sediments. Previous DRI decisions on the Airport property required an undisturbed natural buffer surrounding Upper Gate and other freshwater ponds, with only limited vegetation removal allowed. The DEIR indicates that locating the new Taxiway D closer to Runway 15-33 is not possible due to FAA separation standards, and work within wetlands and open water cannot be avoided. Among the identified alternatives, the retaining wall (2C) and bridge/elevated taxiway surface (2D) both appear less impactful to Upper Gate Pond than the preferred 2:1 side slope. These options warrant further evaluation in light of their potential wetland resource benefits. The cost and feasibility of providing mitigation for wetlands impacts, potentially at other locations, should be considered as part of this analysis. CCC 02

The Runway 15-33 extension alternatives analysis notes that the preferred alternative adds only the minimum pavement necessary to meet runway length needs. We support the modification of the design initially selected in the ENF, which would have added more pavement than the current proposal. Even with that design change, the Project is expected to increase impervious surface coverage by about 40 acres, requiring additional measures to manage and treat runoff. As the design for runway and taxiway modifications is finalized, the Applicant should identify any new areas where vegetated buffers can be maintained or re-established to protect nearby surface waters and incorporate these locations in landscaping and maintenance plans. The DEIR indicates that new leaching catch basins will be installed to capture stormwater, and a Vortechs water quality unit will be relocated. Details on the size, location, and design of these stormwater systems should be provided if available. The Applicant should plan for ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies. CCC 03 CCC 04 CCC 05

As proposed, the Project anticipates clearing 8.65 acres of land with a mixture of forest and shrubs. Tree removal will be timed to avoid negative impacts on potential bat populations: outside of the summer roosting period (April through September), and when possible, between October and March. This schedule is a good construction practice which is likely to protect other wildlife including breeding bird species. The Applicant should still aim to minimize tree and shrub clearing and land disturbance to the extent possible and mitigate when unavoidable. The DEIR proposes to offset carbon releases and loss of carbon sequestration resulting from the Project with tree planting/replanting, and preservation of forested areas north of the airport. Commission staff encourage the Applicant to pursue permanent protection of existing forest via conservation restriction where feasible and identify locations on-site and elsewhere in the Town of Barnstable that might be appropriate for new planting. CCC 06 CCC 07

The proposed improvements will involve construction and disturbance in several locations that are near known archaeological sites and may be archaeologically sensitive. The DEIR states the Applicant will prepare an avoidance plan for review by Massachusetts Historical Commission to address known archaeological sites in the area. The potential for unexpected discoveries should also be addressed by an unexpected discoveries plan and general monitoring of cultural resources during the construction process. CCC 08

The Project is not expected to generate a significant increase in vehicular traffic volume on the adjacent roadway network and construction-related impacts will be temporary. Any increases in traffic volume to and from the Airport are likely to be gradual, resulting from market and operational factors. The Applicant commits to implementing a Transportation Demand Management ("TDM") program as part of the Master Plan. Commission staff support the inclusion of a TDM program as a method to reduce single-occupancy vehicle trips to the Airport and promote alternative transportation options. The DEIR notes several planned roadway infrastructure projects in the vicinity of the Project site, including but not limited to, the MassDOT Airport Rotary improvements and the Town of Barnstable Route 132 Corridor Improvements. We encourage the Applicant to review and coordinate with MassDOT and the Town of Barnstable to ensure multimodal connectivity is provided to the Airport from these roadways and major intersections. CCC 09 CCC 10

Thank you for the opportunity to provide comments on the Project. Commission staff are available to answer any questions you might have about these comments.

Sincerely,

Kristy Senatori

Kristy Senatori
Executive Director

Cc: Project File
Alyssa Jacobs, Epsilon Associates
Katie Servis, Airport Manager, Cape Cod Gateway Airport
Elizabeth Jenkins, Director, Barnstable Planning & Development
Barnstable Cape Cod Commission Representative, via email
Cape Cod Commission Chair, via email
Cape Cod Commission Committee on Planning and Regulation Chair, via email

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
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Maura T. Healey
Governor

Kimberley Driscoll
Lieutenant Governor

Rebecca L. Tepper
Secretary

Gary Moran
Acting Commissioner

February 9, 2024

Rebecca L. Tepper
Secretary of Energy and Environment
Executive Office of Energy and
Environmental Affairs
Boston, MA 02114
ATTN: MEPA Office
100 Cambridge Street, Suite 900

RE: DEIR Review. EOEEA 16640
BARNSTABLE Cape Cod Gateway Airport
at 480 Barnstable Rd

Dear Secretary Tepper,

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Draft Environmental Impact Report (DEIR) for the Cape Cod Gateway Airport at 480 Barnstable Rd, Barnstable, Massachusetts (EOEEA #16640). The Project Proponent provides the following information for the Project:

Consistent with its safety mission, the proposed Projects, included in the Airport's recent Master Plan (2022) update, are needed to meet facility requirements, enhance safety and efficiency of the airfield, and achieve compliance with Federal Aviation Administration ("FAA") standards (FAA AC 150/5300-13B, Airport Design)

Since the filing of the ENF (filed November 30, 2022) and based on comments received from the public during outreach meetings and agency input, the Projects included for consideration in this joint draft EA/EIR have been revised. Projects discussed in the Draft EA/EIR only include those anticipated to receive federal and state funding in the near future (next 5 to 7 years). The Projects include the extension of Runway 15, modification of taxiways A, B and D, construction of a run-up area and noise wall, removal of Taxiway E, and aeronautical development within the North and East Ramp areas. Future projects anticipated to take place beyond a 7+ year timeframe, including terminal building improvements, are excluded from discussion.

This Draft EA/EIR provides extensive and detailed analysis of the Projects and potential environmental impacts, alternatives considered, and proposed environmental mitigation measures.

Bureau of Water Resources (BWR)Comments

Wetlands. The Project Proponent has adequately addressed the Wetland's Program comments submitted in response to the ENF. The Proponent discussed compliance with the applicable performance standards to each of the resource areas' anticipated impacts in Chapter 8 and quantified permanent impacts in the most recent design in relation to site constraints and the proposed realignment of Taxiway D. Mitigation measures include a wetland replication area to be designed

and constructed per MassDEP's Inland Wetland Replication Guidelines. According to the DEIR, it is anticipated the Proponent will seek an Order of Conditions from the Barnstable Conservation Commission and a Section 401 Water Quality Certification from the Department. Adherence to the respective performance standards will be reviewed during these permitting processes."

Drinking Water. Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan recommends improvements needed to meet the goals of the Airport and its users. The Projects, constructed over the next 7 years, include the extension of Runway 15, modification of taxiways A, B and D, construction of a run-up area and noise wall, removal of Taxiway E, and aeronautical development within the North and East Ramp areas.

The Airport Property abuts several properties containing municipal Public Water Supply sources. Each source has a designated Zone 1 and Zone II protection area as required by the Massachusetts Drinking Water Regulations (310 CMR 22.00). After review of the included figures in the DEIR, the MassDEP Drinking Water Program has determined that these projects do not interfere with, or intrude on, the Zone 1 of any of the public water supply sources. The entire airport property is within a Zone II, but the regulations do not preclude this construction activity. Activities within the Zone II are subject to local bylaws which are required by the Massachusetts Drinking Water Regulations. MassDEP's Drinking Water Program concludes that the proposed project will not impact the public water supply sources adjacent to the airport property.

Stormwater Comments:

National Pollutant Discharge Elimination System (NPDES) Construction General Stormwater Permit.

The Project Proponent acknowledges that its activities will require filing a Notice of Intent (NOI) with the United States Environmental Protection Agency (US EPA). Access to information regarding the NPDES Stormwater requirements and an application for the Construction General Permit is obtained by completing and submitting a Notice of Intent (NOI) to EPA via the Stormwater Discharges from Construction Activities | National Pollutant Discharge Elimination System (NPDES) | US EPA.

The Proponent is advised to consult with Margarita Chatterton at Chatterton.Margarita@epa.gov or by phone at 601-918-1034 for questions regarding EPA's NPDES Construction General Permit requirements.

Industrial Stormwater Permit

The Project Proponent has acknowledged its requirement for an EPA NPDES Multi Sector General Permit (Industrial Stormwater) Program (https://www.epa.gov/sites/production/files/2016-04/documents/sector_s_airtransmaint.pdf).

Under the 2015 Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), EPA has updated the requirements for Sector S to incorporate the Airport deicing effluent limitation guidelines and new source performance standards. Airlines and airports conduct deicing operations on aircraft and airfield pavement to ensure the safety of passenger and cargo flights. In the absence of controls, deicing chemicals are widely dispersed causing pollutants to enter nearby rivers, lakes, streams, and bays. On May 16, 2012, EPA published the Airport Deicing ELG in the Federal Register to control the discharge of pollutants

from airport deicing operations to surface waters. See 40 CFR Parts 9 and 449. The requirements largely apply to wastewater associated with the deicing of airfield pavement at primary airports. The rule also established NSPSs for wastewater discharges associated with aircraft deicing for a subset of new airports. These guidelines are implemented in discharge permits issued by states and EPA Regional Offices under the NPDES program. Therefore, the 2015 MSGP is incorporating the requirements from the Airport ELG that are appropriate to the kinds of discharges the permit authorizes. Additional information regarding this EPA permit may be found at: https://www3.epa.gov/npdes/pubs/sector_s_airtransmaint.pdf .

The Proponent is advised to consult with Abed Ragab at ragab.abdulrahman@epa.gov or 617-918-1695 and Michelle Vuto at vuto.michelle@epa.gov or 617-918-1222 for any of its questions regarding EPA's NPDES stormwater permitting requirements.

Underground Injection Control

The Proponent acknowledges that each of its UICs will be registered with the UIC program.
The Project Proponent is reminded that these structures must be registered through the submittal of a BRP WS-06 UIC Registration application through MassDEP's electronic filing system, eDEP. The statewide UIC program contact is Joe Cerutti, who can be reached at (617) 292-5859 or at joseph.cerutti@state.ma.us . All information regarding on-line (eDEP) UIC registration applications may be obtained at the following web page under the category "Applications & Forms": https://www.mass.gov/underground-injection-control-uic.

Waste Water Management. Cape Cod Gateway Airport is required to demonstrate the ability to apply extinguishing agent as part of its FAA Part 139 safety certification. The capital improvements to the airport should include provisions to collect the wastewater containing the extinguishing agents generated during these demonstrations and/or training events so that proper treatment and/or disposal can occur in conformance with Massachusetts requirements. DEP 01

Bureau of Waste Site Cleanup (BWSC) Comment
Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed project area. A disposal site is a location where there has been a release to the environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000].

Five releases have been reported at or within the vicinity of the project area since the submittal of the ENF in January 2023. One release identified as Release Tracking Number 4-0030077 occurred at 714 Iyannough Road approximately 300 feet from the Cape Cod Gateway Airport. This release is currently open; however, based on the type and volume of oil released it is unlikely to impact the proposed project. Four other releases (4-0029977, 4-0029946, 4-0029870, 4-0029807) have been closed with Permanent Solution Statements with No Conditions; three of the releases occurred at Cape Cod Gateway Airport. Any soil excavated within a Disposal Site Boundary of either an open or closed site is considered remediation waste and must be handled as such.

Interested parties may view a map showing the location of BWSC disposal sites using the MassGIS data viewer at MassMapper. Under the Available Data Layers listed on the right sidebar, select "Regulated Areas", and then "DEP Tier Classified 21E Sites". MCP reports and the compliance status of specific disposal sites may be viewed using the BWSC Waste Sites/Reportable Release Lookup at: https://eeaonline.eea.state.ma.us/portal#!/search/wastesite

BWSC has reviewed the DEIR for the Cape Cod Gateway Airport and offers the following comments: Section 6.13.10 Impact Summary, states that the project does not have the potential to involve a contaminated site. However, portions of the project are located within the Disposal Site Boundary of RTN 4-0026347 which contains PFAS contamination.

The DEIR describes the measures the Proponent plans to take to comply with MGL C. 21E and the MCP for this project. MassDEP agrees with the proposed work as described in the DEIR for hazardous materials/MCP disposal sites with the following additional comments: MassDEP reiterates that one or more RAM Plans or possibly a modified Phase IV Remedy Implementation Plan may be necessary for the various construction activities as proposed in the DEIR. MassDEP also reiterates that the Proponent and LSP should evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347. All remediation waste shall be properly managed per the MCP. DEP 02 DEP 03

MassDEP also directs the Proponents attention to the portions of the MCP that state that remedial activities shall not result in the exacerbation of contamination. The Proponent and the LSP should work together to ensure that future RAMs for the airport construction activities do not exacerbate contamination. In particular, it should be demonstrated that any excavation of, or introduction of, soil beneath the caps will not exacerbate groundwater contamination. DEP 04

All requirements of the MCP shall be followed during this project.

The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A LSP should be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup.

Spills Prevention and Control. The Department acknowledges that Cape Gateway Master Plan - reporting: "In accordance with Code of Federal Regulations 40, Subpart 112 (40 CFR 112), a Spill Prevention, Control, and Countermeasure Plan (SPCCP) is maintained by the Airport to minimize the risk associated with bulk storage and transfer of Oil and Hazardous Materials (OHM)." The DEIR further reports: "During construction, all potential contaminants will be stored, handled and disposed of so that accidental releases to the environment are avoided. Spill prevention and control measures will be implemented consistent with the Airport's Spill Prevention, Control and Countermeasure Plan (SPCCP), and will include measures to prevent spills, provide emergency response measures and training of all construction personnel."

The Project Proponent is advised that a spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential on-site activity releases. Information related to spills prevention best practices may be obtained at the following web page: https://www.mass.gov/files/spill_prevention.pdf? DEP 05

Hazardous Waste Management. The Department acknowledges that Cape Gateway Master Plan, in has developed an emergency response plan, which is discussed in the NPC.

If any occupant of the Project generates hazardous waste and/or waste oil, that entity must register with the MassDEP or EPA to obtain a permanent identification number, as applicable, in accordance with 310 CMR 30.000 for legally generating and managing regulated waste. The Proponent is advised to consult at this MassDEP website https://www.mass.gov/guides/hazardous-waste-generation-generators to determine if the Proponent qualifies as a generator of hazardous waste and/or waste oil. DEP 06

Bureau of Air and Waste (BAW) Comments

Air Quality.

Construction and/or Demolition Air/Noise Pollution

Construction and demolition activity must conform to current Massachusetts Air Pollution Control regulations governing nuisance conditions at 310 CMR 7.01, 7.09 and 7.10 and not cause or contribute to a condition of air pollution due to dust, odor or noise. As such, the proponent should propose measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during construction. DEP 07

To determine the appropriate requirements please refer to:
310 CMR 7.09 Dust, Odor, Construction, and Demolition
310 CMR 7.10 Noise

Air Pollution

.
The Project Proponent reports: "The construction phases of each proposed action are expected to temporarily increase air emissions from both fugitive dust generated from earth moving activities and the exhaust of non-road construction equipment. Emissions from the operation of construction machinery (i.e., carbon monoxide [CO], nitrogen oxide [NOx], particulate matter [PM10, PM2.5], volatile organic compounds [VOCs], and GHG emissions) are short-term and not generally considered substantial."

Several strictly enforced measures would be used by contractors to reduce potential emissions and minimize impacts including:

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;
- Monitoring actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the site;
- Periodic street and sidewalk cleaning with water to minimize dust accumulations; and
- The contractor would comply with the National Emission Standards for Hazardous Pollutants (NESHAP) throughout demolition and construction activities."

MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emission standards currently available for off- DEP 08

road engines. If a piece of equipment is not available in the Tier 4 configuration, then the Proponent should use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.

The Proponent is advised that the Department's Air Quality regulations (310 CMR 7.11(3) Aircraft) specifies that "No person owning or operating an airport shall cause, suffer, allow, or permit routine warmups, testing, or other operation of aircraft while on the ground, in such a manner as to cause or contribute to a condition of air pollution, outside of the property lines of the airport, that in the opinion of the Department are unreasonable and feasibly preventable." To further clarify, this means that all aircraft, once on the ground, should cease to operate its engines until such time when departure is warranted. Alternatively, to running these engines on idle, when warranted to maintain comfort within these aircraft during the warm summer months, plug in stations should be provided by the airport as an alternative to the greenhouse gas emissions, air pollutant emissions and noise that are emitted while these engines continue to operate while on the ground to keep onboard systems (refrigeration, air conditioning, etc.) running. DEP 09

Noise

MassDEP's noise policy establishes a 10 dB(A) increase in sound as the maximum sound impact which cannot be exceeded at the property line or the nearest receptor. Sound increases are evaluated in accordance with the MassDEP Noise Pollution Policy Interpretation. The Proponent is reminded that the 10 dB(A) is not a design standard but a performance standard. Sound impacts should be mitigated to extent practicable. DEP 10

Massachusetts Idling Regulation

The ENF reports that the Project Proponent proposes to maintain an idle free work area.

MassDEP reminds the Proponent that unnecessary idling (i.e., in excess of five minutes), with limited exception, is not permitted during the construction and operations phase of the Project (Section 7.11 of 310 CMR 7.00). Regarding construction period activity, typical methods of reducing idling include driver training, periodic inspections by site supervisors, and posting signage. In addition, to ensure compliance with this regulation once the Project is occupied, MassDEP requests that the Proponent install permanent signs limiting idling to five minutes or less on-site. DEP 11

Solid Waste Management. The DEIR states: "It is estimated that up to approximately 200,000 cubic yards of soil may be generated over the course of the various projects being executed. As discussed above several Sites with documented releases of OHM are located within or adjacent to areas of proposed Airport improvements. Based on the location of these Sites, it is anticipated that potentially contaminated soil or groundwater maybe encountered during the implementation of the various projects..."

Additionally, the DEIR states that the proponent's "selected contractor will apply relevant and practicable procedures to allow for the reuse and recycling of construction materials. Prior to construction, the contractor will develop a Construction Waste Management Plan to ensure that a minimal amount of waste debris is disposed in landfills. For materials that cannot be recycled, solid

waste will be transported in covered trucks to an approved solid waste facility per the DEP Regulation for Solid Waste Facilities, 310 CMR 16.00."

As a reminder, the Project Proponent is advised of the following requirements:

1. Reuse of any material requires submittal of MassDEP's BWP SW41 – Beneficial Use Determination – Restricted Applications. The permit is intended to protect public health, safety, and the environment by comprehensively regulating the reuse of waste materials as effective substitutes for a commercial product or commodity. Information pertaining to this requirement is available *at* https://www.mass.gov/doc/instructions-sw-39-40-41-42-beneficial-use-determinations/download.

2. *Compliance with Waste Ban Regulations*: Waste materials discovered during construction that are determined to be solid waste (e.g., construction and demolition waste) and/or recyclable material (e.g., metal, asphalt, brick, and concrete) shall be disposed, recycled, and/or otherwise handled in accordance with the Solid Waste Regulations including *310 CMR 19.017: Waste Bans*. Waste Ban regulations prohibit the disposal, transfer for disposal, or contracting for disposal of certain hazardous, recyclable, or compostable items at solid waste facilities in Massachusetts, including, but not limited to, metal, wood, asphalt pavement, brick, concrete, and clean gypsum wallboard. The goals of the waste bans are to: promote reuse, waste reduction, or recycling; reduce the adverse impacts of solid waste management on the environment; conserve capacity at existing solid waste disposal facilities; minimize the need for construction of new solid waste disposal facilities; and support the recycling industry by ensuring that large volumes of material are available on a consistent basis. Further guidance can be found at: https://www.mass.gov/guides/massdep-waste-disposal-bans.
   MassDEP recommends the Proponent consider source separation or separating different recyclable materials at the job site. Source separation may lead to higher recycling rates and lower recycling costs. Further guidance can be found at: https://recyclingworksma.com/construction-demolition-materials-guidance/ DEP 12

   For more information on how to prevent banned materials from entering the waste stream the Proponent should contact the RecyclingWorks in Massachusetts program at (888) 254-5525 or via email at info@recyclingworksma.com. RecyclingWorks in Massachusetts also provides a website that includes a searchable database of recycling service providers, available at http://www.recyclingworksma.com.

3. *Asphalt, brick, and concrete (ABC) rubble* associated with the removal of existing structure must be handled in accordance with the Solid Waste regulations. These regulations allow, and MassDEP encourages, the recycling/reuse of ABC rubble. The Proponent should refer to MassDEP's Information Sheet, entitled " Using or Processing Asphalt Pavement, Brick and Concrete Rubble, Updated February 27, 2017 ", that answers commonly asked questions about ABC rubble and identifies the provisions of the solid waste regulations that pertain to recycling/reusing ABC rubble. This policy can be found on-line at the MassDEP website: https://www.mass.gov/files/documents/2018/03/19/abc-rubble.pdf.

4. *Tree removal/land clearing/clean wood:* As defined in 310 CMR 16.02, clean wood means "discarded material consisting of trees, stumps and brush, including but limited to sawdust, chips, shavings, bark, and new or used lumber"…etc. Clean wood does not include wood from commingled construction and demolition waste, engineered wood products, and wood containing

or likely to contain asbestos, chemical preservatives, or paints, stains or other coatings, or adhesives. The Proponent should be aware that wood is not allowed to be buried or disposed of at the Site pursuant to 310 CMR 16.00 & 310 CMR 19.000 unless otherwise approved by MassDEP. Clean wood may be handled in accordance with 310 CMR 16.03(2)(c)7 which allows for the on-site processing (i.e., chipping) of wood for use at the Site (i.e., use as landscaping material) and/or the wood to be transported to a permitted facility (i.e., wood waste reclamation facility) or other facility that is permitted to accept and process wood.

If you have any questions regarding the Solid Waste Management Program comments above, please contact Jennifer Wharff at Jennifer.Wharff@mass.gov or Mark Dakers at Mark.Dakers@mass.gov for solid waste comments.

Asbestos. The Project Proponent reports that "Due to the age and material at the Airport, it is suspected that asbestos may be present in materials if installed before 1981.

As a reminder, the Project Proponent is advised of the following requirements:

1. *Asbestos Survey Requirements.* Prior to conducting any demolition or renovation activities, MassDEP's Asbestos Regulations at 310 CMR 7.15(4) requires any owner or operator of a building or facility to employ or engage a Department of Labor Standards (DLS) licensed asbestos inspector to thoroughly inspect the facility using US EPA approved procedures and methods to identify the presence, location and quantity of any ACM or suspect ACM and to prepare a written asbestos survey report. The survey shall identify and assess suspect ACM located in all areas that will be breached or otherwise affected by the demolition activities, including, but not limited to wall cavities, pipe chases, subsurface conduits, areas above ceilings and under/between multiple layers of flooring. Adequate and representative samples must be collected of all suspect asbestos containing building materials and sent to a DLS certified laboratory for analysis, using US EPA approved analytical methods.

   The written asbestos survey report shall contain an inventory of the exact locations of the ACM or suspect ACM from which samples were collected, analytical results of all samples taken, the date(s) such samples were collected, the name(s) of the persons who provided asbestos analytical services, and a blueprint, site map, diagram or written description of the facility and locations(s) thereof subject to demolition or renovation. This documentation shall clearly identify each location subject to demolition and/or renovation and the corresponding footage (square and/or linear) of any ACM or suspect ACM in each location.
2. *Asbestos Abatement Requirements.* The owner or operator must hire a DLS licensed asbestos abatement contractor to remove and dispose of any asbestos containing material(s) from the facility or facility component, prior to conducting any demolition or renovation activities. The removal and handling of asbestos from the facility or facility components must adhere to the Specific Asbestos Abatement Work Practice Standards required at 310 CMR 7.15(7).

   If any proposed alterations or exemptions to Specific Asbestos Abatement Work Practice Standards required at 310 CMR 7.15(7) are proposed, the owner or operator must submit a Non-Traditional Asbestos Abatement Work Practice Plan (NTWP) to MassDEP for approval in accordance with 310 CMR 7.15 (14). As part of an NTWP submittal package, MassDEP will require pre- and post- abatement inspections to ensure alternate work practices specified

in the approved NTWP are adhered to. The AQ 36 Non-Traditional Asbestos Abatement Work Practice Approval application form (AQ 36) and instructions for submitting the NTWP and AQ 36, can be found at the following links: Application: https://www.mass.gov/how-to/aq-36-non-traditional-asbestos-abatement-work-practice-approval Instructions: https://www.mass.gov/doc/instructions-aq-36/download

3. *Asbestos Notification Requirements.*
In accordance with 310 CMR 7.15 (6), the asbestos contractor is required to submit a BWP ANF-001 Asbestos Notification Form to MassDEP at least ten (10) working days prior to beginning any abatement or removal of asbestos containing materials from the facility. The AQ 04 (ANF 001) notification form, and instructions for completing an ANF 001, can be found at the following links:

Notification Form: https://www.mass.gov/how-to/file-an-aq-04-anf-001-asbestos-removal-notification
Instructions: https://www.mass.gov/doc/bwp-aq-04-anf-001-asbestos-removal-notification-instructions-july-2015- 0/download

If you have any questions regarding the Asbestos Program comments above, please contact Colleen Ferguson at Colleen Ferguson@mass.gov..

Other Comments/Guidance

The MassDEP Southeast Regional Office appreciates the opportunity to comment on this DEIR. If you have any questions regarding these comments, please contact George Zoto at George.Zoto@mass.gov or Jonathan Hobill at Jonathan.Hobill@mass.gov.

Very truly yours,

Jonathan E. Hobill,
Regional Engineer,
Bureau of Water Resources

JH/GZ

Cc: DEP/SERO

ATTN: Millie Garcia-Serrano, Regional Director
Gerard Martin, Deputy Regional Director, BWR
John Handrahan, Deputy Regional Director, BWSC
Seth Pickering, Deputy Regional Director, BAW
Jennifer Viveiros, Deputy Regional Director, ADMIN
Maissoun Reda, Chief, Wetlands and Waterways, BWR
Brendan Mullaney, Waterways, BWR

Daniel DiSalvio, Chief, Compliance and Enforcement, BAW
Joseph Cerutti, Underground Injection Control, BWR/Boston
Jim McLaughlin, Chief, Drinking Water, BWR
Michelle Regon, Drinking Water, BWR
Mark Dakers, Solid Waste, BAW
Jennifer Wharff, Solid Waste Management, BAW
Angela Gallagher, Audits, BWSC
Amanda Cantara, Site Management, BWSC

Patel, Purvi (EEA)

From: Chris Powicki <chrisp@weeinfo.com>
Sent: Friday, February 9, 2024 3:42 PM
To: Patel, Purvi (EEA)
Subject: Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan Projects (#16640) - Sierra Club Comments

Importance: High

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Thank you for the opportunity for Sierra Club's Cape Cod & Islands Group, representing members and supporters in Barnstable, Dukes, and Nantucket counties, to submit comments on the Draft Environmental Impact Report (DEIR) for Cape Cod Gateway Airport (formerly Barnstable Municipal Airport) Master Plan Projects (#16640).

Sierra Club concludes that the Airport's DEIR is incomplete as submitted, and that additional analysis and reporting are required before judgment can be made as to whether MEPA requirements have been satisfied. Two main concerns exist:

First, the DEIR does not acknowledge or in any way mitigate historical and continuing unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport. In particular, decades of handling and use of aqueous film-forming firefighting foams (AFFF) at and around the Airport resulted in inadvertent but extensive PFAS contamination of public water supply wells and exposed Hyannis residents, students, workers, and visitors to significant but unknown amounts of hazardous but unknown chemical mixtures for significant but unknown time periods with potentially significant but unknown health consequences. PFAS-contaminated soil and the associated plumes flowing onto and emanating from Airport property continue to pose risks. SC 01

Sierra Club appreciates that the Airport has ceased use of AFFF except in emergency situations, that control measures are in place for when AFFF use is required, and that groundwater drawn from Hyannis-area wells is designated "safe" under the current state drinking water standard based on the granular activated carbon (GAC) treatment systems installed at various locations, including within the Maher wellfield located on property downgradient from the Airport owned by the town of Barnstable. However, this does not change the history of contamination and exposure in the Hyannis area nor erase current and future concerns facing EJ and other communities. SC 02

No controls are in place for the PFAS that, prior to the initiation of GAC treatment, was distributed through the drinking water supply network serving EJ and other communities and then discharged into the environment via septic leaching and wastewater treatment plant effluent injection; nor for PFAS passing from the Maher wellfield into Mill Creek, Lewis Bay, and the associated ecological and human communities; nor for individuals who consume shellfish and other species harvested from PFAS-contaminated surface waters. The state's current PFAS6 standard is subject to change pending federal action to ratchet down maximum contaminant levels across this entire class of "forever" chemicals, some of which have just been proposed for hazardous waste designation. Sierra Club's position is that no level of PFAS in drinking water is safe.

The DEIR indicates that the Airport's proposed runway expansion and reconfiguration projects will utilize heavy machinery in moving hundreds of thousands of cubic yards of soil, including in locations coincident with and adjacent to temporary caps installed to prevent precipitation from mobilizing PFAS in soil contaminated by the Airport's own storage and use of AFFF. The DEIR asserts that precautions will be taken to ensure that these caps remain intact during construction and that the PFAS-contaminated soil will remain in place indefinitely, like a ticking time bomb. This is not acceptable. SC 03

Sierra Club recommends that the Airport be required to address these concerns by updating and expanding the DEIR as follows:

- To characterize unfair and inequitable AFFF-related burdens imposed on designated EJ communities to the fullest extent possible based on available and emerging sources of data, including the federally funded "Massachusetts PFAS and Your Health Study" involving blood and urine sampling, exposure assessment, and neurobehavioral assessment of Hyannis residents led by Silent Spring Institute; and SC 04
- To incorporate a permanent cleanup solution, to be implemented as a form of mitigation within the scope of the Airport's proposed projects, that will leverage the onsite availability of earth-moving equipment to remove AFFF-contaminated soil under the Airport's temporary caps for offsite transport, final disposition, and elimination of what would otherwise represent a "forever" source of risk to Hyannis-area communities. SC 05

Second, the DEIR does not provide detail on or in any way mitigate aviation-related greenhouse gas emissions associated with long-term Airport operations, particularly those attributable to fuel sales at and around the Airport and to fuel consumption by commercial and private aircraft flying into and out of the Airport. These emissions are not accounted for because the Airport asserts that proposed runway extensions and facility upgrades, designed for the purpose of facilitating safe and economically viable operation through 2040 and beyond, will have no impact on the number of arrivals SC 06

and departures relative to current Airport usage. No other future usage scenarios are considered, and transportation solutions that could be applied for reducing near-term reliance on the Airport and the most carbon-intensive form of travel to and from the Cape & Islands—such as electrified bus service and expanded vehicle charging infrastructure—are only addressed in the context of facilitating Airport usage. This is not acceptable.

Sierra Club recommends that the Airport be required to address these concerns by updating and expanding the DEIR as follows:

- To present a current and detailed emission inventory for the Airport across all gases and sources, to apply these and other data in evaluating changes in aviation-related emissions attributable to the post-2005 expansion in fast-ferry service to the Islands, and to estimate future emissions under varying Airport usage scenarios including a no-build alternative; and SC 07
- To incorporate a climate mitigation plan consistent with state policies and targets aimed at eliminating or minimizing aviation-related emissions across the time periods encompassed by the Airport's Master Plan and the anticipated lifetime of the proposed projects. SC 08

Addressing these concerns and recommendations is essential to ensure that public interests in a stable climate, clean water, environmental justice, and public health are met in Hyannis and across the Commonwealth.

Thank you for the careful consideration of Sierra Club's comments.

Sincerely,

Chris Powicki
Chair, Executive Committee
Sierra Cape Cod & Islands Group
774.487.4614

Christine K. Greeley
48 Glenwood Street
West Yarmouth, Massachuset s 02673

Purvi Patel
Rebecca L. Tepper
Executive Office of Energy and Environmental Affairs
100 Cambridge Street- Suite 900
Boston, MA 02114
February 8, 2024

Re: 16640
Cape Cod Gateway Airport (Barnstable Municipal Airport) Master Plan Projects

I am writing to express my concerns about the proposed expansion of the airport and extension of Runway 15/33. I believe that any such plan should be denied, and additional review undertaken.

I have been a home owner in West Yarmouth since 1981 and an actively concerned citizen about airport operations and proposed expansions since the mid-1980's. Nothing since then has changed my opinion that the airport is operating in an area of serious environmental concern and a danger to the significant human population residing around it. This proposed expansion increases these dangers.

This expansion appears predicated by their commitment to the idea that "if we build it, they will come" and truly ignores the tremendous loss in carrier traffic over several decades of "improvements" that have not led to achieving anything they had claimed would happen.

Instead:

1. Still unaddressed is the significant damage to land extending into the Mahar Wells and all the way down into Mill Creek in West Yarmouth draining finally into Lewis Bay. While some at empts have been made on catchments etc., there is still significant finger pointing going on between the airport and the Fire Fighting Academy over whose fault it is and what will be done to address all the issues. It doesn't mat er whose fault it is, as the issue is CG 01

there, and there is significant work still not accomplished on airport land. A stream from an “unknown industrial source” is noted by the Wendy’s Restaurant which is also proximal to the Cape Air Hangers property and doesn’t seem appropriately addressed.

Of note is that Nantucket Airport is currently dealing with PFAS pollution on their airport acknowledging that it has come from airport operations- they never had an academy!

2. The need for a larger terminal facility seems absurd when the current terminal is empty most days and the airport has been trying to seek interested lessors for unoccupied space including restaurant/snack bar space. If not for the car rental counters at the far end of the terminal there are not even employees behind counters. And the parking lots are glaringly empty. CG 02

   The airport staff have been at ending national conferences at empting to get airlines to consider operations into here. So far, they have atr acted a seasonal operator able to use current runway capacity, a helicopter tour company and flight training school- all of which will lead to noisier operations at the airport and surrounding neighborhoods.

3. Although PFAS contamination is being discussed, there is a significant issue of environmental pollution that has not been discussed, let alone addressed- the emissions clearly visible from the landing and departing aircraft. This is significant as recent studies show that it is particularly bad from smaller planes, which are heavy users of this airport. These emissions are very visible to the naked eye and are falling on the heavily populated areas around the runways. Barnstable has been allowing significant development of residential apartment complexes for several years now at the northern end of the airport, while Hyannis is a significant commercial town. Of note is that other airports, I believe Bedford, are beginning to explore this issue as the scientific reports are emerging on this danger to humans. CG 03

4. There should be a great concern about the enlargement of the airport as Barnstable approved, and now has, the 1st power transfer station for the CG 04

Vineyard Wind ocean based turbines. The issues about the dialectic fluids needed at the site required significant engineering and containment plans as any leakage of even a few gallons could destroy the aquifer. This facility sits in a direct line at the end of 15/33 and would be an environmental disaster for Cape Cod should an aircraft ever crash into it.

5. Of additional concern is the fact that the airport needs to seek "easements" in order to complete their proposals. This comes after years of being told this would never be needed and development by our town should not encroach on the airport. These easements will be needed on environmentally fragile land and should not be allowed. CG 05

6. The final issues include the flight paths and procedures that compromise the quality of life for so many residential properties especially at the southern end of 15/33. For years we have been seeking a bet er design and compliance and have only ever got en responses saying "It's voluntary" or the "FAA doesn't require." Looking at current noise complaint data from the airport is meaningless as people have given up calling! They claim it's pointless and they get the same answer every time with no results. CG 06

   At this time the Town of Yarmouth is at empting to work with the airport on developing serious responsive flight procedures- but increasing runways is not the best solution at this time to the significant issue of noise pollution. Noise pollution studies are now emerging that show it to be a significant public health issue.

I do not believe that this proposed Master Plan and its design for increasing Runway 15/33 and the terminal should be approved at this time. There are too many significant issues still to be addressed that will have a directly permanent negative effect on the natural environment and lives of the residents of this area for very few positive results for the airport.

Sincerely,

Christine K. Greeley

View Comment

Comment Details

EEA #/MEPA ID	First Name	Address Line 1	Organization
16640	Thomas	630 Barnstable Rd	Griffin Avionics Inc.
Comments Submit Date	**Last Name**	**Address Line 2**	**Affiliation Description**
2-9-2024	Collier	--	Individual
Certificate Action Date	**Phone**	**State**	**Status**
2-9-2024	--	MASSACHUSETTS	Accepted
Reviewer	**Email**	**Zip Code**	
Purvi Patel, (617)874-0668, purvi.patel@mass.gov	info@griffinavionics.com	02601	

Comment Title or Subject

Topic: EEA#16640

Comments

Segoe UI | 10 pt | Paragraph

Comments in attached file.

Attachments

MEPAcomment.docx(null)

Update Status

Status

Accepted

SUBMIT

Share Comment

SHARE WITH A REGISTERED USER

BACK TO SEARCH RESULTS

I would like to submit my comments about the proposed Airport project. For full disclosure, I have been a Cape Cod resident since the early 80's and have been employed by Griffin Avionics at the Airport for almost 30 years. I have reviewed the draft environmental impact report (DEIR) as well as other comments that were submitted about this project.

First, I am continually amazed that each time the Airport seeks to undertake a new project, there is always talk of moving the Airport operations over to Joint Base Cape Cod. The logistics and the expense of moving not just the Airport facilities but the airfield tenants such as Cape Air, Gull Air and even Griffin Avionics, make it economically unfeasible nor even practical. TC 01

Secondly and most important is the environmental impact of the current airport operation and proposed expansion. Again, as someone who has been here quite some time, the negative knee jerk reaction to "new development" is quite understandable. However, when you consider that the airport sits on 639 acres of land, which is zoned commercial/industrial, and has only developed a paltry 140 acres, this is probably the least developed commercial property in the area. Imagine how much more developed it would be for regular commercial use, which would bring much more noise and pollution from vehicles and other activity. TC 02

Not to dismiss concerns from submitters about noise and pollution, but this Airport's administration, more than any previous, led by the efforts of Katie Servis, the Airport Manager, have been a model for the rest of Cape Cod in new Green Technology and carbon footprint reduction actions. Indeed, this project includes even more green technology, which would almost make their operations carbon neutral, which would be much less than the pollution from a parking lot of a local grocery store. (and no one is asking them to move to a military air base) TC 03

Lastly, the land clearing effect on the environment is addressed extensively in their plan with off-setting mitigation strategies that would reduce any impact to a bare minimum. I strongly support the proposal to move ahead with the full plan and would kindly remind our neighbors of the 2000 jobs that are supported by the Airport as well as over 200 million in annual economic output, that is a benefit to our community, not a detraction. TC 04

View Comment

Comment Details

EEA #/MEPA ID	First Name	Address Line 1	Organization
16640	Karen	--	--
Comments Submit Date	**Last Name**	**Address Line 2**	**Affiliation Description**
2-9-2024	Ingemie	--	--
Certificate Action Date	**Phone**	**State**	**Status**
2-9-2024	--	MASSACHUSETTS	Accepted
Reviewer	**Email**	**Zip Code**	
Purvi Patel, (617)874-0668, purvi.patel@mass.gov	kareningemie@gmail.com	02673	

Comment Title or Subject

Topic: MEPA - #16640 CAP COD GATEWAY AIRPORT - MASTER PLAN PROJECTS COMMENTS

Comments

Attached is my statement of concerns living near the airport. The screenshots of aircraft flying over homes as low as 150' and the videos were taken sitting outside on my deck to show the high levels of aviation noise from aircraft arriving and departing from Cape Cod Gateway Airport.

Please review my comments, data and watch the videos to understand the anxiety and stress myself and residents living near the airport are dealing with. Thank you!

Attachments

Aug634320.MOV(null)

MEPA Cape Cod Gateway.docx(null)

A-Jul2435820.MOV(null)

Aug822620.MOV(null)

aug 6,2023 630pm.MOV(null)

AUG2022720.MOV(null)

low plane 419pm.MOV(null)

150' jan 19 .png(null)

AUG3035920.MOV(null)

175' Jan 19.png(null)

FEB2041021.MOV(null)

Aug1431620.MOV(null)

2023 Aug 6, 534pm.MOV(null)

AUG2030920.MOV(null)

Update Status

Status

Accepted

SUBMIT

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BACK TO SEARCH RESULTS

MEPA - #16640 CAPE COD GATEWAY AIRPORT
(formerly Barnstable Municipal Airport)
Master Plan Projects -- Comment Date: February 8, 2023

I am a Cape Cod resident, concerned about my health, well-being and safety living near the CC Gateway Airport. It is impossible to be outside without the stress and anxiety of aircraft noise. I find myself and guests having to block our ears outside due to the jet noise, impeding the peace and quiet living in a home that I invested my hard-earned money into. If I knew the airport traffic would grow to be this constant and loud, I would have built my forever dream home somewhere else.

My hope is, that the flight paths can be changed or some other alternative resolution can be reached. Ref: John Wayne Airport Noise Abatement (General Aviation Noise Ordinance including Abatement Guide, Noise Monitoring Stations and General Aviation VFR Traffic Pattern Procedures)

No one should have to live with the noise and the constant flow and exposure to high levels of aviation noise and exhaust emissions from aircraft flying over. Our fundamental quality of life has been violated by destroying the enjoyment, peace and tranquility living in the Hyannis Park neighborhood.
Aircraft are flying some days every 2 to 5 minutes as low as 150' with decibel readings over 100. (This is documented by hundreds of videos, flight tracker, and decibel data captured using 2 devices, handheld BAFX digital sound meter and NIOSH sound level meter for DBL readings).

The FAA's current metric for quantifying aviation noise exposure, Day-Night Average Sound Level (DNL), as well as the sound level assessment including computer modeling to predict future sound levels by placing sound receptors at the airport does not adequately capture the true effects of aircraft noise in our daily lives. The current metric needs to be changed and sound receptors need to be placed in residential areas for an accurate noise reading. August 28, 2022 documented 5 planes flying over in ½ hour, decibel average of 83.1, on June 29, 2023 documented 10 planes in 1 ½ hours, decibel average 80.1 (Other dates documented as well)

Airplanes are flying at altitudes documented as low as 150 feet over residents, the hospital, medical facilities, businesses and flying lower over traffic on Rt 28, a state highway where one of the incidents below took place (near TJ Max spilling fuel). Some of the incidents have been minor, some fatal. What is considered a safe altitude flying over residential homes? I have asked multiple times and have not received any answers. Below listed are the number of Cape Cod incidents from local papers. Not if, but when there is an incident in our neighborhood, who will be held accountable?
24 plane incidents from 1990 – 2002
7 plane incidents from 2008 – 2021
9 plane incidents from 2021 - 2023

I have attended Cape Cod Gateway Airport public meetings, have contacted the noise abatement coordinator for years regarding these issues without resolution. I gave up complaining!!!!

- increased traffic, helicopters, larger jets, (charters, private, commercial) no notification KI 01
- risk incident factor of low altitude jets KI 02
- the frequency and chronic exposure to noise levels and air emission pollution KI 03
- the airports noise abatement procedures and defined flight paths KI 04
- the airports vector tracking system not reflecting the correct flight path of aircraft flying over residents. I have documented videos and tracking system screenshots. KI 05

Please consider reviewing Cape Cod Gateway Airports Flight/Noise Abatement Procedures and potential flight path changes for arrival and departures to minimize aircraft noise and incident risk in the Hyannis Park residential area.

Regards, a concerned citizen, West Yarmouth, Ma.

Safari File Edit View History Bookmarks Window Help

Fri Feb 9 3:48 PM

airport.vector-us.com

Replay Time : 1/19/2021 12:41:34 PM

Layers

Map | Satellite | Day Mode | **Night Mode**

Labels

Replay Controls

From: 01/19/2021 12:40 pm

To: 01/19/2021 12:45 pm

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KHYA/
150

Address Search

Flight surveillance data delayed 10 mins for security purposes.

Help

Keyboard shortcuts | Map data ©2024 Google

faa.html 2024-0....12.35 PM 2024-01...7.32 PM 2023-12...2.03 PM 2023-12...1.34 AM 2023-12...18.42 PM 2023-12...07.57 PM

Safari File Edit View History Bookmarks Window Help

Fri Feb 9 3:48 PM

airport.vector-us.com

Replay Time : 1/19/2021 12:41:33 PM

Layers

Map | Satellite | Day Mode | **Night Mode**

Labels

Replay Controls

From: 01/19/2021 12:40 pm

To: 01/19/2021 12:45 pm

Speed: 1x

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KHYA/ 150

Address Search

Flight surveillance data delayed 10 mins for security purposes.

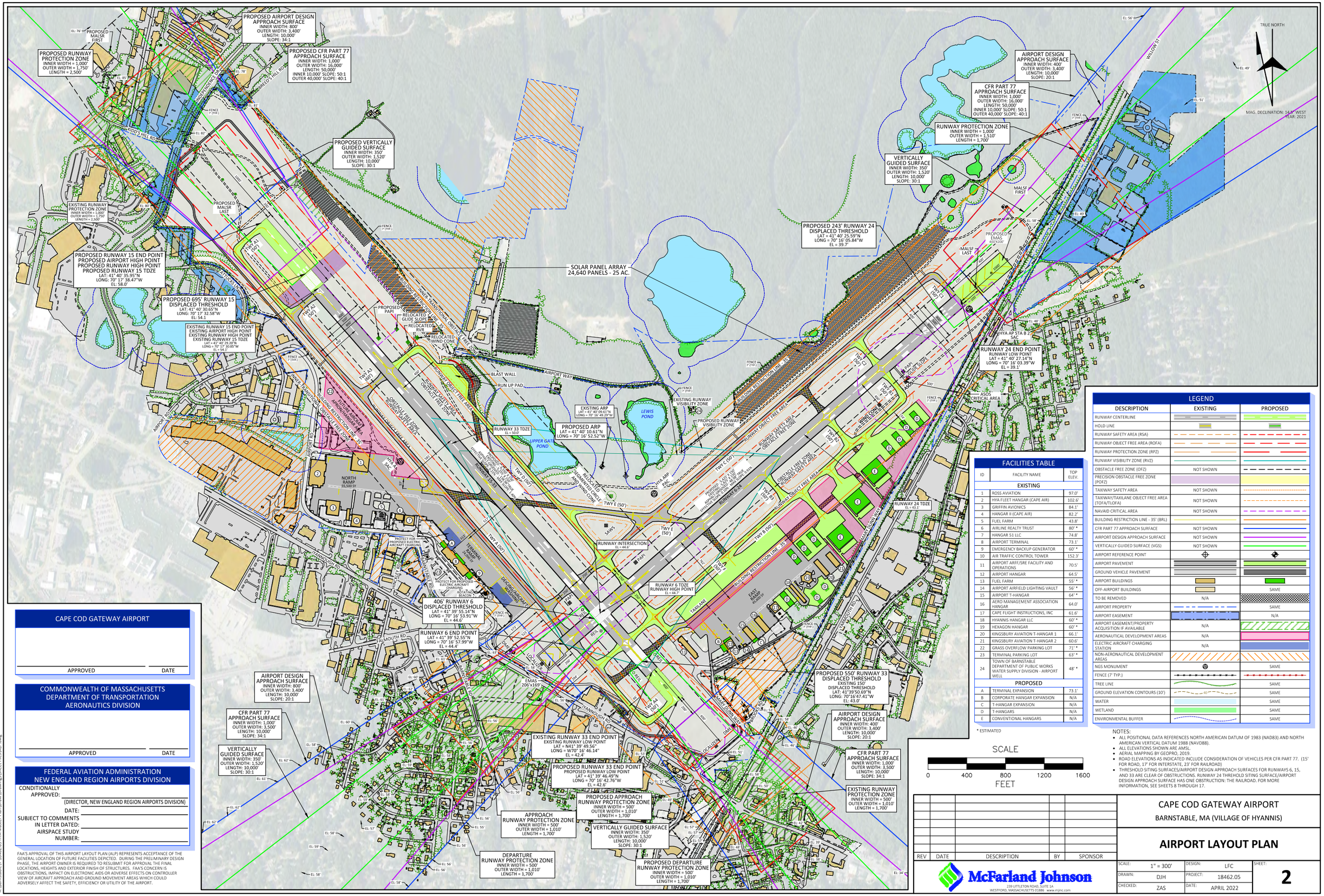
Help

Keyboard shortcuts | Map data ©2024 Google

faa.html 2024-0....12.35 PM 2024-01...7.32 PM 2023-12...2.03 PM 2023-12...1.34 AM 2023-12...18.42 PM 2023-12...07.57 PM

Appendix B

Airport Layout Plan



LEGEND

DESCRIPTION	EXISTING	PROPOSED
RUNWAY CENTERLINE		
HOLD LINE		
RUNWAY SAFETY AREA (RSA)		
RUNWAY OBJECT FREE AREA (ROFA)		
RUNWAY PROTECTION ZONE (RPZ)		
RUNWAY VISIBILITY ZONE (RVZ)		
OBSTACLE FREE ZONE (OFZ)	NOT SHOWN	
PRECISION OBSTACLE FREE ZONE (POFZ)		
TAXIWAY SAFETY AREA	NOT SHOWN	
TAXIWAY/TAXILANE OBJECT FREE AREA (TOFA/TLOFA)	NOT SHOWN	
NAVAID CRITICAL AREA	NOT SHOWN	
BUILDING RESTRICTION LINE - 35' (BRL)		
CFR PART 77 APPROACH SURFACE	NOT SHOWN	
AIRPORT DESIGN APPROACH SURFACE	NOT SHOWN	
VERTICALLY GUIDED SURFACE (VGS)	NOT SHOWN	
AIRPORT REFERENCE POINT		
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT		
AIRPORT BUILDINGS		
OFF-AIRPORT BUILDINGS		SAME
TO BE REMOVED	N/A	
AIRPORT PROPERTY		SAME
AIRPORT EASEMENT		N/A
AIRPORT EASEMENT/PROPERTY ACQUISITION IF AVAILABLE	N/A	
AERONAUTICAL DEVELOPMENT AREAS	N/A	
ELECTRIC AIRCRAFT CHARGING STATION	N/A	
NON-AERONAUTICAL DEVELOPMENT AREAS		
NGS MONUMENT		SAME
FENCE (7' TYP.)		
TREE LINE		SAME
GROUND ELEVATION CONTOURS (10')		SAME
WATER		SAME
WETLAND		SAME
ENVIRONMENTAL BUFFER		SAME

FACILITIES TABLE

ID	FACILITY NAME	TOP ELEV.
EXISTING		
1	ROSS AVIATION	97.0'
2	HYA FLEET HANGAR (CAPE AIR)	102.6'
3	GRIFFIN AVIONICS	84.1'
4	HANGAR II (CAPE AIR)	82.2'
5	FUEL FARM	43.8'
6	AIRLINE REALTY TRUST	80' *
7	HANGAR 51 LLC	74.8'
8	AIRPORT TERMINAL	73.1'
9	EMERGENCY BACKUP GENERATOR	60' *
10	AIR TRAFFIC CONTROL TOWER	152.3'
11	AIRPORT ARFF/SRE FACILITY AND OPERATIONS	70.5'
12	AIRPORT HANGAR	64.5'
13	FUEL FARM	55' *
14	AIRPORT AIRFIELD LIGHTING VAULT	56' *
15	AIRPORT T-HANGAR	64' *
16	AERO MANAGEMENT ASSOCIATION HANGAR	64.0'
17	CAPE FLIGHT INSTRUCTIONS, INC	61.6'
18	HYANNIS HANGAR LLC	60' *
19	HEXAGON HANGAR	60' *
20	KINGSBURY AVIATION T-HANGAR 1	66.1'
21	KINGSBURY AVIATION T-HANGAR 2	60.6'
22	GRASS OVERFLOW PARKING LOT	71' *
23	TERMINAL PARKING LOT	63' *
24	TOWN OF BARNSTABLE DEPARTMENT OF PUBLIC WORKS WATER SUPPLY DIVISION - AIRPORT WELL	48' *
PROPOSED		
A	TERMINAL EXPANSION	73.1'
B	CORPORATE HANGAR EXPANSION	N/A
C	T-HANGAR EXPANSION	N/A
D	T-HANGARS	N/A
E	CONVENTIONAL HANGARS	N/A

* ESTIMATED

SCALE

0 400 800 1200 1600

FEET

NOTES:

- ALL POSITIONAL DATA REFERENCES NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
- ALL ELEVATIONS SHOWN ARE AMSL.
- AERIAL MAPPING BY GEOPRO, 2019.
- ROAD ELEVATIONS AS INDICATED INCLUDE CONSIDERATION OF VEHICLES PER CFR PART 77. (15' FOR ROAD, 17' FOR INTERSTATE, 23' FOR RAILROAD)
- THRESHOLD SITING SURFACES/AIRPORT DESIGN APPROACH SURFACES FOR RUNWAYS 6, 15, AND 33 ARE CLEAR OF OBSTRUCTIONS. RUNWAY 24 THRESHOLD SITING SURFACE/AIRPORT DESIGN APPROACH SURFACE HAS ONE OBSTRUCTION: THE RAILROAD. FOR MORE INFORMATION, SEE SHEETS 8 THROUGH 17.

CAPE COD GATEWAY AIRPORT

APPROVED _____ DATE _____

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION AERONAUTICS DIVISION

APPROVED _____ DATE _____

FEDERAL AVIATION ADMINISTRATION NEW ENGLAND REGION AIRPORTS DIVISION

CONDITIONALLY APPROVED: _____

(DIRECTOR, NEW ENGLAND REGION AIRPORTS DIVISION)

DATE: _____

SUBJECT TO COMMENTS IN LETTER DATED: _____

AIRSPACE STUDY NUMBER: _____

FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE, THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL THE FINAL LOCATIONS, HEIGHTS AND EXTERIOR FINISH OF STRUCTURES. FAA'S CONCERN IS OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS OR ADVERSE EFFECTS ON CONTROLLER VIEW OF AIRCRAFT APPROACH AND GROUND MOVEMENT AREAS WHICH COULD ADVERSELY AFFECT THE SAFETY, EFFICIENCY OR UTILITY OF THE AIRPORT.

REV	DATE	DESCRIPTION	BY	SPONSOR

CAPE COD GATEWAY AIRPORT

BARNSTABLE, MA (VILLAGE OF HYANNIS)

AIRPORT LAYOUT PLAN

McFarland Johnson

239 LITTLETON ROAD, SUITE 1A
WESTFORD, MASSACHUSETTS 01886 www.mjinc.com

SCALE:	1" = 300'	DESIGN:	LFC
DRAWN:	DJH	PROJECT:	18462.05
CHECKED:	ZAS	DATE:	APRIL 2022

SHEET: 2

K:\Barnstable\T-18462.05 HYA Master Plan\Draw\Drawings\Sheet Files\ALP.dwg

Appendix C

Phase IV Report

FINAL Immediate Response Action (IRA) Status Report 14, IRA Completion Statement, Phase IV Final Inspection Report and Completion Statement, and Phase V Status Report

Cape Cod Gateway Airport

Hyannis, Massachusetts

RTN 4-26347

April 2024

Prepared for:
Cape Cod Gateway Airport
480 Barnstable Road Hyannis,
MA 02840

Prepared by:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563

IMMEDIATE RESPONSE ACTION (IRA) STATUS REPORT 14, IRA COMPLETION STATEMENT, PHASE IV FINAL INSPECTION REPORT AND COMPLETION STATEMENT, AND PHASE V STATUS REPORT

CAPE COD GATEWAY AIRPORT
480 BARNSTABLE ROAD
HYANNIS, MASSACHUSETTS
RELEASE TRACKING NUMBER 4-26347

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IMMEDIATE RESPONSE ACTION (IRA) STATUS REPORT 14, IRA COMPLETION STATEMENT, PHASE IV FINAL REPORT AND COMPLETION STATEMENT, AND PHASE V STATUS REPORT

CAPE COD GATEWAY AIRPORT
480 BARNSTABLE ROAD
HYANNIS, MASSACHUSETTS
RELEASE TRACKING NUMBER 4-26347

1.0 INTRODUCTION

The Horsley Witten Group, Inc. (HW) has been retained by the Cape Cod Gateway Airport (the "Airport") to prepare this Immediate Response Action (IRA) Status Report 14, IRA Completion Statement, Phase IV Final Report and Completion Statement, and Phase V Status Report (the "Report") for its property located at 480 Barnstable Road, Hyannis, Massachusetts. For the purpose of this report, the term "Airport" specifically refers to the Cape Cod Gateway Airport property located at 480 Barnstable Road, as set forth above, and the term "Disposal Site" refers to the area impacted by the release of oil and/or hazardous material (OHM) subject to Release Tracking Number (RTN) 4-26347. A Site Locus Map and the Estimated Disposal Site Map are provided as Figures 1 and 2.

The Report focuses on the implementation of the chosen remedial action alternative to address a release of per- and poly-fluoroalkyl substances (PFAS) in soil and groundwater relating to the Airport's historic use of a fluorotelomer based aqueous film forming foam (AFFF). As documented in the report titled *Final Phase IV Implementation of the Selected Remedial Action Alternative* prepared by HW and submitted to the Massachusetts Department of Environmental Protection (MassDEP) in January 2023 (the "Final Phase IV Report"), the chosen remedial action to achieve either a Permanent or Temporary solution are soil caps to prevent and/or reduce leaching of PFAS into groundwater, and treatment at the Maher Wells to provide drinking water to the community that meets the regulatory standards promulgated by the MassDEP. The Airport is compensating the Town of Barnstable for its allocated portion of responsibility for groundwater treatment that is occurring at the Maher Wells.

This Report has been prepared in accordance with the requirements of the Massachusetts Contingency Plan (MCP). Consistent with the *Final Public Involvement Plan* for the Airport dated September 16, 2019, all persons identified on Table 1, Community Notification List, were notified of the availability of this Report.

Considering this is the last phased report until a Permanent or Temporary Solution is submitted, a IRA Status Report 14, DRAFT IRA Completion Statement, and DRAFT Phase IV Completion Report was submitted to MassDEP and notifications were distributed to all persons identified on Table 1, Community Notification List October 11, 2023. The Airport send a subsequent notification on

November 13, 2023 to all persons identified on Table 1, Community Notification List, about an in person meeting on December 18, 2023. After the meeting, the Airport provided an additional 45-day review period for the public and MassDEP to review the PFAS related investigation completed by the Airport. A Phase V Status report has also been included in this Report due to the extended comment period and the required regulatory submittals needed to satisfy the requirements of the Massachusetts Contingency Plan. Questions and Comments received by the public (the Siera Club, Hyannis Park Civic Association and Mr. Thomas Cambareri) are detailed below. Copies of the submitted questions/comments are included in Appendix A.

<u>Sierra Club</u>

(1) *Acknowledgment that the Airport's records regarding historical AFFF use are inadequate and that its fingerprinting and source attribution conclusions, which are presented as authoritative, are based on limited and highly caveated analytical findings.*

As detailed in the Revised Phase II Comprehensive Site Assessment dated January 2022 and prepared by HW ("Phase II Report"), the Airport has a complete record of AFFF purchase records going back 20 years that clearly document the quantity and type of AFFF usage at the Airport. Additionally, the Airport's analytical data set includes over 200 groundwater samples collected from 2016 to 2024. These groundwater samples along with multiple other lines of evidence including groundwater flow direction, contaminant fate and transport, groundwater modeling and environmental forensics all support the fact that the Airport PFAS plume impacted the Maher Wells in 2022. Forensics also supports the chemical signature as being related to fluorotelomer based AFFF, which corelates to the Airports purchase records. The analytical data was processed by a Massachusetts certified laboratory and is not limited or highly caveated. Additionally, environmental forensics is routinely utilized by environmental professionals for source identification and is not uncommon or unusual. At the October 2023 UMass Soils Conference, multiple case studies and scientific methods using PFAS forensics were presented by various consultants and regulatory agencies including MassDEP for source identification and differentiation.

(2) *Independent and transparent evaluation of the Airport's public assertions that AFFF handling and use at the airport did not become a source of PFAS contaminating the town's Maher wells until 2022.*

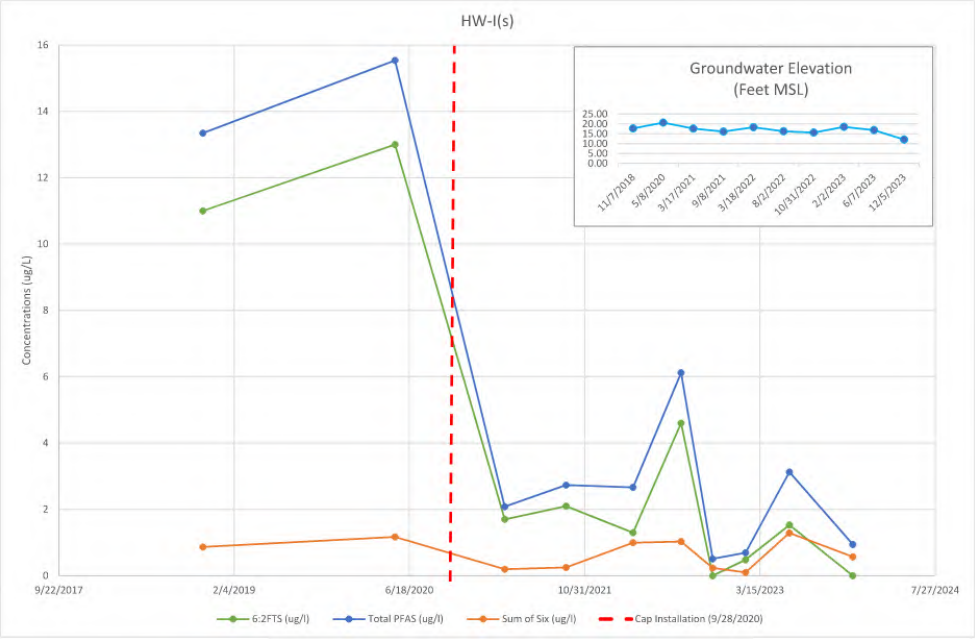
These details have been included in multiple reports that are available to the public at any time for review. MassDEP and the public have been given opportunities at various points in the regulatory timeline to review and comment on several of these reports including the Phase II, Phase III and Phase IV Reports. As previously stated, hundreds of analytical samples have been collected by the Airport in support of this determination which is also supported by hundreds of samples collected off-Airport by others.

Reports submitted to the MassDEP can be accessed at:

- https://flyhya.com/airport-info/pfas/
- https://eeaonline.eea.state.ma.us/EEA/FileViewer/Rtn.aspx?rtn=4-0026347

(3) *Commitment to investigate, understand, and mitigate historical and continuing PFAS-related health burdens imposed on designated environmental justice communities in the Hyannis area.*

The Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEPs website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater (depicted below). The Airport is not responsible for controlling non-airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility. Additionally, the Airport's PFAS plume reached Maher Wells after the construction of the new treatment was completed and as such, no exposure to the community is believed to have occurred.



(4) *Development of a final cleanup solution involving removal of PFAS-contaminated soil at the town's airport as a "forever" source of risk to Hyannis-area communities.*

Removal of all PFAS impacted soil relating to the Airports historic use of AFFF is currently economically infeasible. As indicated in the Final Phase III Report dated June 2022 and prepared by HW (the "Phase III Report"):

"[T]he excavation of PFAS contaminated soils currently located below the two capped areas would result in approximately 3,000 trucks transporting approximately 105,000 tons of soil with an estimated transportation and disposal costs in excess of 75 million dollars. As such, large scale excavation is not justified by the benefits according to the Massachusetts Contingency Plan."

The Phase III Report concludes that the existing caps along with potential future limited excavation and/or capping, is the final remedy for managing PFAS impacted soil at the Airport and as approved by the state agencies overseeing the remediation process. The caps are inspected and groundwater data is collected every six months to document the effectiveness of the caps. This information is submitted to MassDEP every six months and is available online from MassDEP or the Airport's website.

Hyannis Park Civic Association

(1) *Yarmouth requires monitoring wells to be installed and monitored beyond the Maher Wells along the Yarmouth town line. We need assurances that the PFAS plumes are indeed contained before they reach our community. We need data that no overflow from the Maher wells exists now or in the future. The admission that the installed caps at the disposal sites are temporary begs the question—when can we expect a true remediation effort of these sites?*

As indicated in the Final Phase IV Report dated January 2023 and prepared by HW (the "Phase IV Report", the Airports PFAS plume is modeled to be below the regulatory standards as it passes by Maher Well 2 (ME-2). The Airports PFAS plume is less than the GW-3 standard which is protective of surface water. Additionally, monitoring wells beyond the Maher Wells is not necessary for the purposes of delineating the nature and extent of the Airport's PFAS plume consistent with the Massachusetts Contingency Plan. Installation of monitoring wells by Responsible Parties for non-Airport related PFAS sources in Yarmouth may be necessary. These additional wells would be the responsibility of others, not the Airport. As an example, of the 131 soil samples and 210 groundwater samples collected at the Airport to determine Airport responsibility, the highest concentration of PFAS Sum of 6 on Airport was 1.2902 micrograms per liter (ug/l). The MassDEP regulatory limit for Sum of 6 PFAS in GW-1 areas is 0.02 ug/l. Other off airport locations include the following and their associated PFAS laboratory levels collected to date:

- The Barnstable Fire Training Academy levels thus far collected were 320 ug/l,
- The Industrial Park area (Airport Road) was at 0.0574 ug/l, and
- The Rotary (near Wendy's) was at 0.0987 ug/l.

Additionally, the caps are being referred to as "temporary" until Phase V is complete, and a Permanent or Temporary Solution is achieved. As indicated in the Phase IV Report:

"Fluctuations in the concentration of PFAS is expected as the groundwater level rises and falls over the next several years and contaminants are flushed from the capillary fringe zone. After flushing is complete, concentrations associated with the Airports PFAS Plume are expected to decline. The effectiveness of the caps will be documented through the collection of groundwater samples until a Permanent or Temporary Solution can be achieved. The caps will be inspected twice annually and maintained as necessary until a Permanent or Temporary Solution can be achieved. Assuming that the future Permanent or Temporary Solution relies on the caps to maintain a level of no significant risk, the caps will be maintained and inspected in the future as part of an AUL".

The caps were designed consistent with the requirements of a permanent engineered barrier. A copy of the engineering design plans for the two caps are included in Appendix B of the Phase IV Report.

(2) *The question of an "orphaned" plume behind Wendy's needs addressing. It is not enough to say that some vague external source is the culprit. Clean it up.*

During it's investigation, the Airport identified several non-Airport PFAS related plumes that are located hydraulically upgradient, downgradient, and/or cross-gradient of the Airport but not on Airport property, thus from other industrial/commercial sites. These plumes are not related to the Airports PFAS plume and are the responsibility of others. These plumes have been brought to the attention of MassDEP and others by the Airport. If a Responsible Party can be identified by the MassDEP, they will issue a Notice of Responsibility requiring the Responsible Party to initiate investigation and cleanup activities. The Airport is not responsible for PFAS plumes relating to non-Airport sources. It is now in the hands of MassDEP to identify other sources and/or determine next steps.

(3) *There seems no urgency on the part of the Airport or BFTA to collaborate toward a clean up solution of the BFTA's PFAS that exists on the Airport property. One would think that the Airport would be pushing for BFTA to clean it up. Certainly, the BFTA should take the blame. But where is the Airport's collaboration plan for the clean-up of contamination caused by BFTA?*

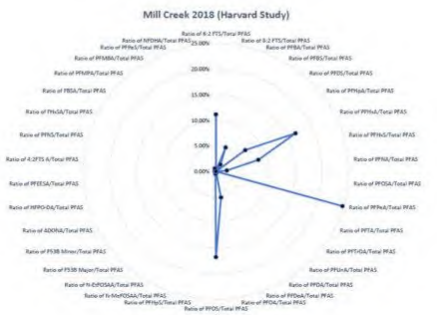
The BFTA is responsible for the investigation and cleanup of its PFAS plume consistent with the Massachusetts Contingency Plan. The treatment system at the Maher Wells provides safe drinking water to the Airport that meets the regulatory standards for PFAS. As such, the risk of PFAS exposure through drinking water by Airport staff and visitors is being managed by the treatment occurring at Maher Wells. It is not the Airport's responsibility to respond to PFAS contamination not related to the Airport PFAS plume. Additionally, all Airport data is available to

the public and to the BFTA for use in BFTA's own investigations. The Airport and the BFTA have separate Massachusetts Contingency Plan responses. Additionally, the BFTA has not advanced a remedial strategy that requires Airport collaboration as they currently are still progressing towards Phase II requirements of the Massachusetts Contingency Plan. The Airport is now advancing to Phase V.

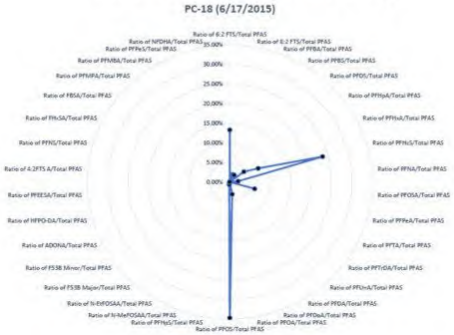
(4) *Mill Creek remains a problem for both BFTA and the Airport. The Airport's signature compound has been detected in the Creek along with BFTA's fingerprint. Can we get a collaborative agreement that should a cost-effective solution present itself in the future, that both these source entities will pay for the clean-up? Yarmouth residents would like to see accountability for damages.*

The Airport's PFAS plume is below the MassDEP GW-3 standard in all locations, which is protective of potential discharges to surface water. Additionally, the forensic signature generated from the Harvard study in 2018 is not consistent with the airport PFAS plume. This is also supported by analytical data and modeling indicating that the Airport's plume didn't reach the Maher Wells until 2022. It is anticipated that the Airport plume will enter Mill Creek, but at concentrations below the GW-1 and GW-3 standards as predicted by the fate and transport models. Forensic signatures of Mill Creek, Maher Well 1, BFTA and the Airport are presented below.

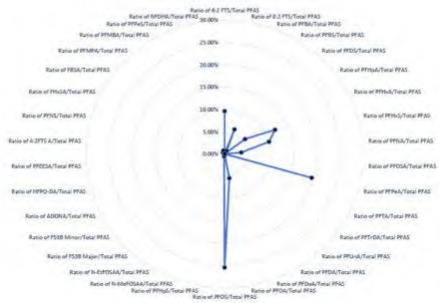
Mill Creek



Fire Training Academy



Maher Well 1



Airport

As such, consistent with the Massachusetts Contingency Plan, the Airport's PFAS plume is not a risk to surface water. The Airport is not responsible for PFAS entering Mill Creek that may be above the GW-3 standard from others. Responsible parties associated with PFAS plumes impacting this area above regulatory criteria are not the responsibility of the Airport. This has been brought to the attention of MassDEP and others by the Airport. If a Responsible Party can be identified by the MassDEP, they will issue a Notice of Responsibility requiring the Responsible Party to initiate investigation and cleanup activities. The Airport is not responsible for PFAS plumes relating to non-Airport sources. It is now in the hands of MassDEP to determine next steps.

Thomas Cambareri

The following are responses to Mr. Cambareri's general comments on the investigations at the Airport and his specific questions on the information contained in the Report.

(1) *The Airport indicates that PFAS from the use of Aqueous Film Forming Foam (AFFF) began in the 1990s. That is a truncated period relative to the Airport's site history going back decades to its time as a Naval station in the 50's, a Presidential Airport for the Kennedy Summer White House in the 60's and a transportation hub for the rapid growth in the 70's and 80's. It seems reasonable to assume there was emergency response capability at the Airport prior to the 1990's. It also stands that AFFF equipment was stored and used on site, and staff was well trained during those decades. This earlier history is important given the broad impact of "forever" PFAS compounds in the Hyannis area community.*

As documented on page 8 of the Phase II:

- *Historical Airport purchase records indicate that a fluorotelomer-based AFFF (ChemGuard 3% mil spec) has been purchased by the Airport over the last twenty years, and interviews with staff indicated that this type of foam was also purchased as early as the 1980s. With the exception of the events detailed below, AFFF was not intentionally sprayed due to cost and limited supply of AFFF.*
    - *Further information regarding foam use was provided through interviews with Art Jenner and Bob Holzman who have worked at the Airport since the 1980's. Both are firefighters and first responders and stated that fluorotelomer based foam was purchased by the Airport since the 1980s. Additionally, according to the ITRC document titled "Aqueous Film-Forming Foam (AFFF)" dated August 2020, fluorotelomer-based AFFF has been available since the 1970s and other AFFF formulations have been available since the late 1960s.*

- *FAA regulations require a Tri-Annual Drill which is a full-scale live exercise that simulates a major airport disaster to test the emergency coordination and response skills of the Airport*

and other first responders. AFFF was used at the Deployment Area between 1994 and 2004 for triannual drills and between 2004 and 2015 for annual AFFF mixture testing. Two firefighting personnel, employed by the Airport since the 1980's, indicated that foam was not used prior to 1991 due to cost, limited availability, and lack of an FAA requirement mandating foam usage.

The use of the Airport by the Navy in the 50s is irrelevant to the PFAS investigation since AFFF is reported by ITRC to have been developed in the late 1960's as indicated above. Additionally, documents suggest that President Kenedy flew into Otis and not the Cape Cod Gateway Airport.

As indicated above, the Airport did have emergency capabilities prior to 1991 and two fire fighters who have worked at the Airport since the 1980s indicated that AFFF was not used for non-emergencies prior to 1991 due to cost, limited availability, and lack of an FAA requirement mandating AFFF usage for emergency use training (Mass Casualty Incident Training) and verifying AFFF consistency. Additionally, as indicated in the revised Phase II Report:

- *The current ARFF/SRE Building was constructed in 1996, and PFAS is assumed to have been released in this area through what is presumed to be incidental spillage, dripping from fire hoses hung to dry, and cleaning of equipment in the event of accidentally engaging the foam pump button. Prior to 1996, the Airport fire truck was housed in the former ARFF/SRE Building located adjacent to the former terminal along the North Ramp. This building was demolished in 2011.*

- *Based on interviews with two firefighting staff who have worked at the Airport since the 1980s, AFFF containers were also stored in this building. The building did have two floor drains that were closed prior to 1997 (discharge location unknown) and a third-floor drain that was traced to a catch basin that discharged to Upper Gate Pond. The former building was surrounded in its entirety by asphalt and, according to stormwater plans from 1999, storm drains in proximity to the building also discharge to Upper Gate Pond. Investigation conducted in the vicinity of the former ARFFF/SRE Building did not identify any of the regulated Six PFAS analytes in soil above the laboratory reporting limit (HW-X(m) [7-9]). Groundwater testing in the area did identify concentrations of the Sum of Six PFAS (HW-X[s] and HW-X[m]) above the applicable Method 1 GW-1 Standard, however the impacts are not consistent with the Airports AFFF release. The detections appear to be related to the off Airport PFAS source(s) that are migrating onto the Airport. Additionally, testing of surface water from Upper Gate Pond did not identify any of the Sum of Six PFAS analytes above the laboratory reporting limit.*

The facts detailed above have been confirmed with multiple rounds of soil and groundwater testing and the Conceptual Site Model supports the statement by the two fire fighters that AFFF was not used prior to 1991 for non-emergencies.

(2) *It is entirely possible that a rapid leaching rate would have resulted in prior slugs of PFAS slugs moving through the aquifer after each release event leaving residual concentrations as the source. The last major AFFF training event was in 2015 with a higher amount of AFFF than typically used. Targeted sampling of shallow groundwater beneath the Deployment area beginning in 2017-2018 found high concentrations of both telomer and legacy AFFF PFAS just two years later.*

It is more likely that the variable water table in this area is responsible for the increase and decrease in PFAS concentration as groundwater interacted with soil in the capillary fringe zone. Between 2017 and 2022, groundwater at HW-F (within the deployment Area) fluctuated 4.9 feet with an average depth of 19.6 feet.

Based on the Conceptual Site Model and details included in multiple reports submitted to the MassDEP, AFFF was first used in the Deployment Area in 1994 and reached groundwater in approximately 2014. Annually, approximately 43 inches of rain is received in the Hyannis area. Using the retardation rate formula included in the Phase II Report and a TOC of 1,350 ppm (median TOC value from the samples collected in the Deployment Area), it is assumed that PFAS moved through the soil column in the Deployment Area at a rate of approximately 10.5 inches per year. This rate correlates with the analytical data collected and the fate and transport model developed for the Airport.

Additionally, as documented in the research article titled "A Mathematical Model for the Release, Transport, and Retention of PFAS in the Vadose Zone" and published in the Water Resources Research Volume 56, Issue 2 and dated February 2020, it can take decades for PFAS to move as little as 15 feet in a sandy soil column. The article relates this partially to the lower water content caused by greater gravity drainage and weaker capillary retention in the sand. This results in higher retardation rates than other soils and PFAS tend to accumulate at air-water interfaces and may stay in the vadose zone for long periods before contaminating groundwater. It is important to distinguish between the Airport's infrequent use of AFFF for training exercises in relation to the BFTA. Groundwater contamination at the BFTA was likely accelerated through PFAS being directly discharged to Flint Rock Pond, shallower depth to groundwater, and more soil saturation events due to continuous fire training exercises with high water usage.

(3) *The Airport's signature compound 6:2 FTS was identified in the Maher #1 well directly downgradient of the Air Rescue Fire Facility (ARFF) prior to it recently showing up in the Maher #2 well from the Deployment Area.*

The detection of 6:2 FTS does not automatically indicate that the Airport is the source. Forensic signatures need to be reviewed by qualified individuals and must also consider dilution, plume comingling, groundwater flow, and PFAS analyte ratios.

6:2 FTS is present in the BFTA plume in multiple locations and concentrations and is also associated with other non-AFFF sources. It has also been detected at several cross-gradient and upgradient locations. As indicated on the radar plots provided above, the PFAS signature detected in Maher Well 1 (6:2 FTS = 10%) and Mill Creek (6:2 FTS = 11%) is more consistent with the BFTA (13%) than the Airport (79%). Again, multiple lines of evidence were included in the investigation to conclude that the Airport's PFAS plume impacted the Maher Wells (ME-2 only) in 2022.

(4) *The Airport indicates that PFAS contamination from the ARFF where equipment was used for years (where AFFF equipment is prepped, cleaned, rinsed, and stored) is the result of a single event in 1996.*

The statement above is incorrect. As indicated in the Phase II and Phase IV Reports:

"The current Airport Rescue and Firefighting/Snow Removal Equipment (ARFF/SRE) Building was constructed in 1996, and PFAS is assumed to have been released in this area through what is presumed to be incidental spillage, drips from fire hoses that are hung to dry, and cleaning of equipment in the event of accidentally engaging the foam pump button. Interior floor drains within the ARFF/SRE building historically discharged to the adjacent grass area that was capped in the fall of 2020 to reduce infiltration of stormwater. The interior floor drains were closed in the 2000's and connected to a permitted discharge to the Barnstable Wastewater Treatment Plant".

The exact date of the release(s) from this area are unknown.

(5) *The Phase 3 and 4 reports do not provide a plausible explanation that the PFAS in the Maher #1 Well was not from the AFFF use at the ARFF. Modeling results by the Airport contain areas for further clarification as commented on the attached.*

As indicated above, the detection of 6:2 FTS does not automatically indicate the Airport is the source. Impacts at Maher Well 1 are consistent with the BFTA signature (i.e., PC-18) and near Wendy's (HW-U[d]). Additional details regarding this are presented in the response to questions below.

(6) *The former ARFF, used until 1996, was also located upgradient of the Maher Wells on the west end of the terminal prior to recorded procurements of AFFF beginning in 2000.*

As indicated above, this area was investigated and determined to not be a source of PFAS consistent with the Airport's release.

(7) PFAS studies at the Martha's Vineyard Airport identified both legacy PFOS and Telomer PFAS compounds in plumes over 2 miles in length. The Gateway airport is similar in many instances, including its use of AFFF, level of flight activity, hydrogeology, and has a

concurrent period of operation to the MV Airport. How is it that PFAS leached into groundwater so much faster in Martha's Vineyard resulting in broad downgradient areas of contamination while the Cape Cod Airport did not? The difference is a major pumping supply well downgradient of the Cape Cod Airport that made the evidence disappear. But it did not really disappear. It was transported away through the water system.

Every Disposal Site and Conceptual Site Model is different and is based on Site specific details that are thoroughly evaluated by a Licensed Site Professional (LSP). The Airport has not been following the PFAS investigation at the Martha's Vineyard Airport because it is not relevant to it's investigation. However, based on a cursory review of the Phase II Comprehensive Site Assessment prepared by Tetra Tech and dated November 18, 2022, the Airport offers the following substantial differences that may account for the large length of the groundwater plume and why it occurred quicker than the Cape Cod Gateway Airport:

- The Martha's Vineyard Airport reported using 100 to 400 gallons of AFFF concentrate during its bi-annual testing, which creates approximately 3,300 to 13,200 gallons of AFFF. The Cape Cod Gateway Airport used 80 gallons of AFFF annually, which created approximately 2,670 gallons of AFFF. This indicates the volume of AFFF discharged at the Martha's Vineyard Airport is anywhere from 2 to 10 times more AFFF usage than the Cape Cod Gateway Airport during apparatus testing.
- AFFF was used on the paved asphalt aprons which discharge to catch basins and ultimately to either underground infiltration galleries or a stormwater outfall. Sheet flow from the paved areas would direct substantial quantities of water concentrated into these small areas with potentially significant PFAS contamination. This scenario would mobilize the contaminants through the soil column at a significantly higher rate than would be expected from a surface release migrating through the subsurface only through contact with precipitation.
- As previously indicated, the Cape Cod Gateway Airports PFAS plume impacted the Maher Well area in 2022 after PFAS treatment was installed. The drinking water provided by Maher Wells meets the MassDEP drinking water criteria. It is much more likely that the impacts detected at Maher Wells prior to 2022 are from other non-airport sources such as the BFTA.

(8) *6:2 FTS has been identified in Mill Creek by Harvard researchers in 2018 and more recently in 2023 sampling by DEP for the Town of Yarmouth. The Airport did not provide an investigation of PFAS in Mill Creek. The Maher wells were basically shut down from 2016 to 2020 due to PFAS contamination which would allowed contaminated groundwater to continue to flow to the creek.*

As indicated above, the PFAS detected in Mill Creek is not consistent with the Airports PFAS release. Additionally, the Airport's PFAS plume has never exceeded GW-3 and has been modeled

to be below the GW-1 standard (based on the Airport's PFAS contribution only). As such, investigation into the PFAS detected in Mill Creek above regulatory standards in the responsibility of others. The Airport has not been provided with the data collected by MassDEP. This has been brought to the attention of MassDEP and others by the Airport. If a Responsible Party can be identified by the MassDEP, they will issue a Notice of Responsibility requiring the Responsible Party to initiate investigation and cleanup activities. The Airport is not responsible for PFAS plumes relating to non-Airport sources. It is now in the hands of MassDEP to identify other sources and/or determine next steps.

(9) The initial proposed remedial monitoring program and the recent IRA status report did not include regular testing and reporting of the Maher wells to the Bureau of Waste Site Clean-up as required in the MCP in order to prove both capture and treatment of PFAS to the impacted public. PFAS testing at the Maher Wells should include a broad suite of compounds including the Airport' signature 6:2 FTS and other compounds and present them in the body of the report. The submittal of regular monitoring reports should be notified to the PIP.

The Airport competed sampling of Maher Wells on 9/17/2020, 7/29/2022, 11/2/2022, 2/2/2023, 5/26/2023, and 12/6/2023. As indicated in the DRAFT Phase IV Completion Report:

"The groundwater treatment system is managed by the Town of Barnstable/Hyannis Water System consistent with MassDEP requirements. As part of the Plant's compliance testing, samples of the treated groundwater are collected quarterly and submitted to a laboratory for analysis of multiple contaminants including PFAS. The Plant also collects process control samples monthly from multiple locations throughout the Plant process including the untreated groundwater, before filtration, after the lead GAC vessel, after the lag GAC vessel and at the treated tap. This information is used to adjust the treatment process as necessary and to determine when GAC replacement is needed. In addition, the Plant has an emergency generator in the event of a power failure".

The testing detailed in the paragraph above is completed by the Town of Barnstable/Hyannis Water System and not by the Airport.

Groundwater monitoring by the Airport will be conducted bi-annually to monitor the effect of the soil caps on the Airports PFAS Plume. At a minimum, groundwater samples will be collected from the following wells for PFAS analysis:

- HW-I(s)
- HW-I(m)
- H-I(d)
- HW-S (s)

- HW-S (m)
- HW-P(s)
- HW-P(m)
- HW-302
- HW-3
- ME-1 (untreated intake water from Maher Drinking Water Well 1)
- ME-2 (untreated intake water from Maher Drinking Water Well 2)
- ME-3 (untreated intake water from Maher Drinking Water Well 3)

Groundwater sampling will occur in May and November. Consistent with PIP requirements, Public comments on monitoring reports is not required. The public can review all reports on-line through either the MassDEP or the Airport's website. Additionally, drinking water quality reports for Hyannis can be obtained from the Town of Barnstable.

(10) It was stated that the preparation, cleaning and rinsing of the AFFF equipment was done only at the Deployment Area rather than at the ARFF Station where 800 gallons of AFFF are routinely stored. The designated area for cleaning equipment as discussed in the Phase II was the ARFF. PFAS6 found in soils and groundwater beneath and downgradient of the ARFF including both legacy and telomer types of AFFF argue that preparation and maintenance of AFFF equipment was at the Fire Station built for that purpose.

The use of AFFF and the subsequent rinsing of apparatus after usage did take place in the Deployment Area. A fire hydrant is located in this area that would allow staff to purge the system of AFFF after usage. It is believed the statement that is being referred to in the Phase II Report is the following:

"The current Airport Rescue and Firefighting/Snow Removal Equipment (ARFF/SRE) Building was constructed in 1996, and PFAS is assumed to have been released in this area through what is presumed to be incidental spillage, drips from fire hoses that are hung to dry, and cleaning of equipment in the event of accidentally engaging the foam pump button. Interior floor drains within the ARFF/SRE building historically discharged to the adjacent grass area that was capped in the fall of 2020 to reduce infiltration of stormwater. The interior floor drains were closed in the 2000's and connected to a permitted discharge to the Barnstable Wastewater Treatment Plant".

The statement above that was included in the Phase II Report is speculation on how the ARFF/SRE Building area may have been impacted with PFAS since no documented release of AFFF in this area was documented. As indicated above, a fire hydrant is in the Deployment Area that was historically used to wash out equipment after AFFF usage.

(11) The second is the insertion that PFAS from the Barnstable County Fire Training Academy (BCFTA), which contaminated the Mary Dunn wells (estimated by HW as occurring) in

1970), was subsequently collected in the sewered areas served by the water supply and discharged by the Hyannis wastewater plant (WPCF) to travel in groundwater over 32 years to the Maher Wells.

When multiple PFAS plumes were identified in the vicinity of the Airport, multiple potential scenarios were evaluated as part of the Conceptual Site Model. The Airport is not required to identify the upgradient source(s) responsible for contamination or to investigate or delineate the extent of these impacts. The Conceptual Site Model has evaluated the BFTA as a potential significant source of PFAS in the area. Considering that Mary Dunn Wells are located within approximately 1,800 feet downgradient of the BFTA, it is entirely possible that PFAS could have impacted the Marry Dunn wells in the late 1970s if AFFF was applied to Flint Rock Pond anytime between the mid 1960's and early 1970s. Travel time from Flint Rock Pond to these wells is less than seven years. For comparison purposes, the highest detected PFAS Sum of 6 in soil at the Airport is almost five times lower than the sediment detections in Flint Rock Pond.

Details included in the report titled *Immediate Response Action Status & Remedial Monitoring Report No. 64 & Interim Phase II CSA Status Report*, prepared by BETA and dated April 2023 document PFAS Sum of 6 in Flint Rock Pond in 2022 as 493.9 ng/l (surface water) and 1,000 ug/kg (sediment) in Mary Dunn Pond at 53 ng/l, and in ground water as high as 303,000 ng/l (PFOS only). These high concentrations and consistent detection of the BFTAs signature in the area supports this statement.

(12) *The ARFF HW-3 monitoring well identified as a downgradient ARFF plume should have been included in the forensic analysis.*

As indicated above, the Airport utilized its entire groundwater data set and included groundwater analytical data collected by others (i.e., BFTA) in the forensic analysis. Additional details are included in the response below, and radar plots and cross-sections for HW-3 are included in the Phase II Report.

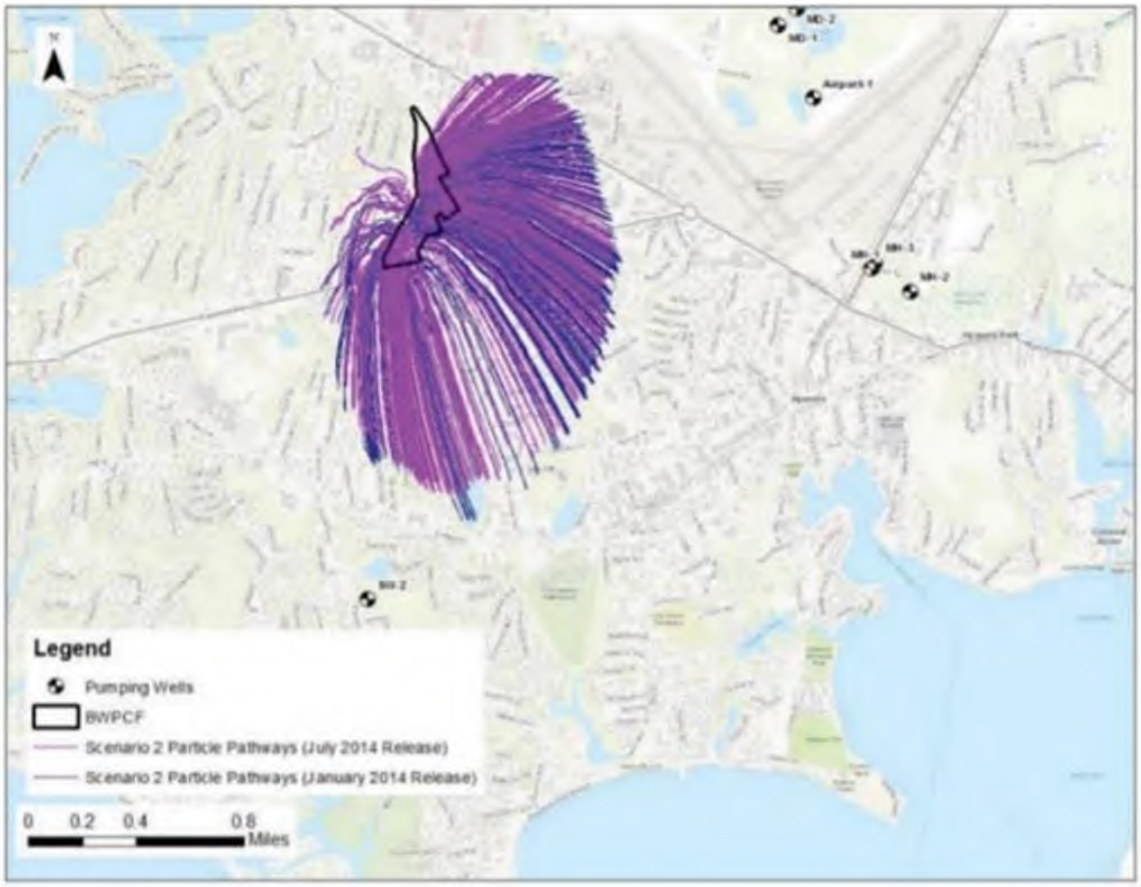
(13) *The contamination of a broad area of the Hyannis aquifer with 1-4 Dioxane is similar to PFAS. While both legacy and telomer AFFF was used extensively at the BCFTA, 1-4 dioxane was not. 1-4 Dioxane is a major component of airplane deicing fluid. Like MTBE, Perchlorate, TCE and Benzene, 1-4 Dioxane moves readily, often leaving no trace at its source. Thus, its absence in source area samples is not de facto proof that it was never used, always contained, and never released. Its presence in downgradient wells and associated resources indicates it was released into the environment. The drainage connection of the deicing pads to the WPCF sewer is also a reasonable area for investigation.*

A substantial number of details on why the Airport is not the source of 1,4 dioxane was presented in the Phase II Report. The source of the 1,4-dioxane was identified hydraulically upgradient to

the Airport in the vicinity of Cape Cod Gun Works (HW-V[m]). Refer to Cross Section 2 in the Phase II Report on page 120 for a graphical depiction of the 1,4-dioxane plume that is impacting the Airport from an unknown off-site source. Additionally, SDS sheets for the deicing fluid utilized at the Airport indicated 1,4-dioxane at a concentration of less than 5 parts per billion. Considering this very low concentration, 1,4-dioxane is not a "major component of airport deicing fluid".

(14) *The actual area of impact of the WPCF was not addressed. Groundwater modeling at its average discharge rate of 1.7 MGD indicates that effluent entrained in groundwater from the WPCF does not migrate to the Maher Wells. A number of modeling studies, including the USGS who delineated the MEP coastal watersheds, that are the basis of the $1.2 Billion-dollar CWMP, do not include nitrogen from the WPCF in the Mill Creek (Maher Well) watershed. Meaning there is no present connection between the WPFC effluent plume and the Maher Wells.*

Particle tracking included in the report titled "The Distribution and Composition of PFAS in Select Water Supply Wells and Surface Waters of Barnstable" dated September 20, 2021 and prepared by Sole Source Consulting includes particle tracking from the wastewater plant as indicated below.



Based on the particle tracks shown above, it would be reasonable to conclude that PFAS discharged at the Wastewater Plant would mix with groundwater as it travels towards the Airport and continues towards Maher Wells. Nitrogen does not act the same as PFAS and it is not unreasonable to conclude that the Wastewater Plant is a potential source of PFAS detected at Maher Wells. The significant investigation completed by the Airport has identified non-Airport related PFAS plumes cross-gradient and upgradient that may or may not be related to the Wastewater Plant. Additionally, it would be the responsibility of others to determine if the PFAS from the BFTA was recirculated by the Wastewater Plant or if the impacts are from other non-AFFF sources.

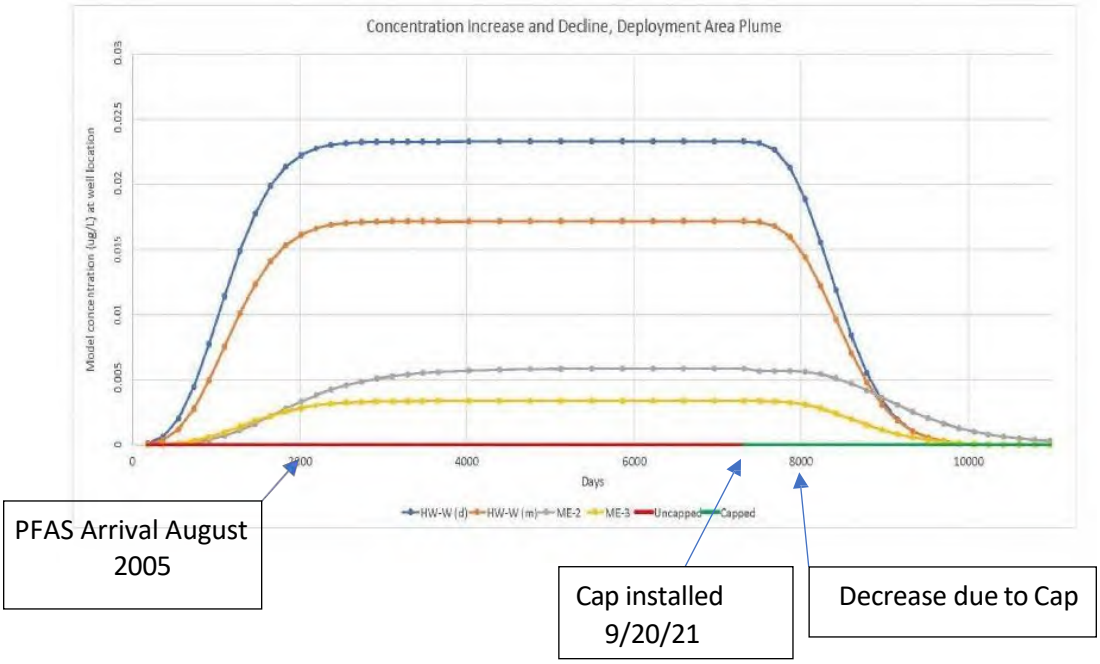
Below are comments provided by Mr. Cambareri on the PFAS Modeling in the Phase II Report.

(1) *The Airport's model graph for the Deployment Area PFAS6 plume indicates that it arrives at the monitoring well HW-W in August 2005. The well is ~1875 feet downgradient from the deployment area. Back calculating to the entrainment of PFAS6 in groundwater beneath the Deployment Area, using the report's estimated migration rate of 1.09, PFAS6 would*

have been entrained in groundwater in the year 2000. That is significantly earlier than the Airport's start of start of the recent Deployment Plume in 2015.

Alternatively, the modeling figure indicates that the decrease of PFAS6 As a result of the effect of capping in 2020 is observed at HW-W after 700 days. HW-W is approximately 1875 feet downgradient of the Deployment area. The results show that the effect of the cap is seen 1875 ft downgradient in 700 days indicating a groundwater travel of over 2.6 feet per day. A very fast migration time supporting fast migration of PFAS slugs.

Airport-model output of PFAS travel from the Deployment area source to selected monitoring wells. Monitoring Well HW-W is 1,875 feet downgradient from the Deployment Area. Calculations use the time in days and date of capping as a reference.



The graph included in the Phase IV Report is being misinterpreted. The graph depicts a transient model that simulates 20 years of recharge (red line on x-axis) with a PFAS Sum of 6 concentration of 1.172 ug/l (direct concentration applied to the aquifer) followed by 10 years of recharge (green line on x-axis) without any PFAS entering the aquifer. As a conservative approach, a 1.5 multiplier was also applied to the model output to overestimate the scenario. For additional context, the 1.172 ug/l was the highest Sum of 6 PFAS detected at the Airport when the model was created.

The model introduces the Sum of 6 PFAS contaminant directly into the groundwater over an area of 9,000 square feet (Deployment Area). The contaminant is then allowed to continuously leach for 20 years (an extreme overestimate and not representative of what occurred) at the 1.172 ug/l

concentration. The model reached equilibrium after approximately 7.5 years. The model is used to predict resulting plume responses and does not represent when contaminates entered the groundwater.

The scenario presented above shows that after approximately 7.5 years (~2,750 days), the concentration of PFAS reaches equilibrium and the model becomes a steady state. This is also the approximate amount of time it would take for the plume to reach Maher Well 2 once it enters groundwater and is traveling approximately 285 feet per year. Once a steady state has been reached, the model continues to run for 12.5 years (this is where the red line meets the green on the plot above). Next, the model stops adding PFAS and the model continues for another 10 years. The model predicts that after the cap is installed and flushing in the capillary fringe is complete, PFAS would drop to zero within approximately seven to ten years. Again, the model was used as a worst-case prediction tool and does not represent when contaminates entered the groundwater.

(2) *The Airport's model for the ARFF used double the highest PFAS6 plume concentration of 362 ng/l that was sampled from the monitoring well HW-3, some 875 downgradient of the ARFF as the source. The ARFF source well HW-P had residual PFAS6 concentrations ranging from 248 ng/l* **(this number is incorrect and should be 65.9 ng/l)** *to 30 ng/l* **(this number is incorrect and should be 7.56 ng/l)**. *The modeled plume graph does not include the HW-3 well A much higher source concentration should have been used at the source to duplicate the high concentration of 362 ng/l found at the downgradient well HW-3. Because the ARFF plume had migrated to HW-3 with PFAS6 at 362 ng/l and 6:2 FTS at 470 ng/l, it likely would have been drawn into the Maher Wells just 700 feet further. Samples from the Maher Well #1, closest to the ARFF, had 253 ng/l PFAS6 and 70 ng/l 6:2 FTS.*

The use of twice the Sum of 6 PFAS concentration for HW-3 is an extremely conservative value. For example, the ratio of the PFAS Sum of 6 to 6:2 FTS for the Deployment Area plume before the cap at its highest concentration was approximately 9 percent (6:2 FTS = 13 ug/l and PFAS 6 = 1.172 ug/l). The ratio used for the ARFF/SRE Area was 154 percent. Also, as indicated in the Phase IV Report, the source of this plume was likely a single event, or several small finite events and this area is also impacted with Sum of 6 PFAS over the applicable standards from non-Airport related sources. Additionally, the Sum of 6 PFAS plume depicted does not extend to HW-3 because the concentration is less than half the GW-1 standard by the time it travels to that location. HW-3 has been included within the Disposal Site boundary based on forensics and the detection of 6:2 FTS consistent with the Airports PFAS plume. Refer to the cross-sections included in the Phase II Report.

2.0 BACKGROUND

The Airport is located in Hyannis, Massachusetts, and provides scheduled airline service, general aviation services, and other aviation related activities. The Airport is owned by the Town of

Barnstable and is managed through the Barnstable Municipal Airport Commission (BMAC). The Airport began as a private airport consisting of a single grass runway before being given to the Town of Barnstable in the 1930's. With the outbreak of World War II, the Airport was taken over by the federal government for wartime training and defense purposes. During the 1940's, the United States Navy used the Airport and expanded the airfield to include three runways. In 1946, the Airport was returned to a two-runway municipal airport (each runway has a designation at each end, being 15-33 and 6-24). In 1948, the Airport was conveyed by the United States government (pursuant to the Surplus Property Act of 1944) to the Town of Barnstable, acting by and through its Airport Commission.

Currently, the Airport is comprised of approximately 645 acres of land, with approximately 140 acres that are impervious (e.g., paved areas such as parking lots, runways, taxiways, aircraft parking aprons, concrete walkways, and building rooftops). The Airport's structures include the main terminal and the Air Traffic Control Tower (ATCT), which are located south of the runways and taxiways, as well as several hangars used for general aviation and operations services. In addition, the current Airport Rescue and Fire Fighting/Snow Removal Equipment (ARFF/SRE) Building is located in the southeast corner of the property. The Airport is situated in an area of Hyannis zoned for Business and Industrial uses.

2.1 Disposal Site Regulatory History

The evaluation to determine the nature and extent of PFAS impacts resulting from the Airports historic use of AFFF began in August 2016, when the Airport conducted an initial round of groundwater sampling at the request of MassDEP. Subsequently, a Notice of Responsibility (NOR), dated November 10, 2016, was issued to the Airport by MassDEP. The NOR requested that the Airport conduct additional field investigations to evaluate:

- The source(s) of PFAS including PFOS and PFOA detected in groundwater at the Airport;
- The source(s) of 1,4-dioxane detected in a monitoring well downgradient of the Airport on the Maher Well field property[1]; and
- To identify potential impacts to public water supply wells operated by the Hyannis Water District at the Mary Dunn and Maher Well fields.

1. *As indicated in the report titled "Final Phase IV Implementation of the Selected Remedial Action Alternative"* prepared by HW, dated January 2023, the Airport is not the source of 1,4-dioxane detected at the Maher Wells and as such the remedial and investigation efforts will focus only on PFAS.

A proposed IRA Plan was submitted to MassDEP for approval in response to the NOR. Subsequently, a meeting was held by MassDEP at the Airport that included other stakeholders including the Barnstable Department of Public Works, the Hyannis Water District, and Barnstable County representatives (representing the Fire Training Academy). At the meeting, IRA Plans were coordinated between the Airport and Fire Training Academy including sampling locations, type of

analysis, groundwater modeling, goals, and next steps. The IRA Plan served as the guide for the soil and groundwater testing conducted since November 2016 to follow up on the results of the previous analyses.

In June 2019, MassDEP issued a Request for Modified IRA Plan/Interim Deadline, dated June 18, 2019 to the Airport. The Modified IRA Request asked that the Airport propose response actions to *"reduce infiltration of precipitation through PFAS-impacted soil, such as temporarily capping the source areas; excavating and properly disposing of the PFAS-impacted soil; or some equivalent approach".* The Airport's response is documented in the report titled "*Final Immediate Response Action Plan Modification",* prepared by HW and dated December 2019 (IRA Modification). The IRA Modification included details for the installation of a cap in two select areas to reduce precipitation infiltration. The two areas are identified as the Deployment Area and ARFF/SRE Building Area as indicated on Figure 2. The two capped areas total approximately 94,100-square feet and represent a majority of the known PFAS source areas at the time of the report relating to the historic use of AFFF. The caps were completed in September 2020 and their construction is documented in the report titled "*Immediate Response Action Plan Status Report 8".* The surficial extent of the two capped areas is indicated on Figure 3.

Refer to Figures 3 through 7 for PFAS sampling locations and to the Revised Phase II Report prepared by HW and dated January 2022 for additional details on the Disposal Site regulatory history and investigations relating to the nature and extent of PFAS relating to the Airports historic use of AFFF. Tabulated analytical results for all analysis collected as part of the investigation are included on Tables 2 through 9.

3.0 FINAL IRA MONITORING REPORT 14

Considering that the Airport has completed Phase IV activities, IRA activities are now considered complete and future monitoring of the Airports PFAS plume and cap areas (the Remedial Monitoring Program) will be documented in future Phase V Status Reports submitted every six months. Additional details on the monitoring program are included Section 9.0, and the Phase V Status Report for this period is included in Section 10.0.

3.1 IRA Field Investigation Activities Completed Between 2016 and 2023

A general description of field investigations conducted at the Airport since the November 2016 NOR and the final IRA samples collected in May and June 2023 are summarized below:

- Three soil samples were collected on December 9, 2016. One sample was taken from each location where it was determined that AFFF had been used at the Airport. The areas included the MCI Drill Area, the Deployment Area, and the 1991 Drill Location.
- One sample of AFFF concentrate was collected on December 9, 2016 and analyzed for PFAS

compounds. The analysis was inconclusive (only 225.5 ug/l of total PFAS was detected) and it is assumed that the sample was not homogeneous (i.e., had separated in the foam bucket) and that the addition of water to the concentrate may affect how precursor PFAS analytes transform into various other detectable PFAS compounds.

- The installation of groundwater monitoring wells at six locations in April 2017: in the vicinity of potential sources of PFAS at the ARFF/SRE Area, at the Deployment Area and at upgradient locations outside of the Airport to evaluate potential off-site sources of PFAS and 1,4-dioxane.
- Groundwater from the new wells was initially sampled for PFAS and 1,4-dioxane in April 2017. Additional groundwater samples and one surface water sample were collected for analysis of PFAS on June 20, 2017.
- A second round of soil samples were collected on June 20, 2017 adjacent to the ARFF/SRE Building and within the Deployment Area to begin to determine the extent of PFAS within the surface soils. Based on the results of these analyses, a third round of samples from these two locations were collected on September 26, 2017. The third round of sampling was designed to further delineate the extent of PFAS in soils both vertically and horizontally, with samples taken at the ground surface and at two and four feet below ground surface (bgs).
- Six soil samples were analyzed for PFAS leaching potential using a synthetic precipitation leaching procedure (SPLP) test between September and October 2017. The chosen samples included four samples from the Deployment Area and two samples from runway reconstruction soils stockpiled at the Airport.
- In October 2017, 20 surface samples were collected both on and off Airport property to determine the concentration of PFAS in the area (i.e., Background PFAS Concentrations).
- In October 2017, three composite soil samples were taken from piles of soil associated with the redevelopment of Runway 15/33. These piles were located on Airport property at the site of the former Mildred's Restaurant and were analyzed for PFAS compounds to evaluate if soil removed from the Airport as part of this redevelopment contained PFAS.
- On August 14, 2018, 24 PFAS surface soil samples were collected in proximity to the ARFF/SRE Building Area and the Deployment Area. PFAS compounds were previously detected in these areas and additional samples were collected to determine the vertical extent of PFAS impacts in soil and to refine the soil disposal site boundary at the Airport.
- In October 2018, three soil borings (DL11, DL14 and HW-F) were advanced in the Deployment Area. One soil boring (ARFF3) was advanced, and one surface soil sample (HW-3) was collected near the ARFF/SRE Building in order to further delineate the extent of PFAS in soils both horizontally and vertically.
- In October 2018, six monitoring wells were installed at the Airport. A cluster of three wells (HW-G(s), HW-G(m), and HW-G(d)) were installed at an upgradient location to evaluate

potential off-site sources of PFAS. Three additional wells (HW-H, HW-I, and HW-J) were installed southeast of the Deployment Area adjacent to the East Ramp.

- In November 2018, six groundwater samples were collected to evaluate PFAS concentrations in the Deployment Area. Four groundwater samples and one surface water sample from Mary Dunn Pond were also collected for analysis of oxygen and hydrogen isotopes to determine the contribution of pond water from Mary Dunn Pond to the four downgradient monitoring wells. The analysis was inconclusive in tracing the contribution of pond water in the downgradient monitoring wells.
- In December 2018, two soil samples were collected from the 1991 Drill Location to determine if PFAS detected in the area are related to background conditions.
- In December 2018, 12 groundwater samples were collected for analysis of PFAS, and 13 groundwater samples were collected for analysis of oxygen and hydrogen isotopes to determine the contribution of pond water from Mary Dunn Pond to the 13 downgradient wells. Groundwater samples were also collected from four monitoring wells in the Maher Wellfield for analysis of 1,4-dioxane.
- In February 2019, three additional surface soil samples were collected to further delineate the soil Disposal Site boundary around the ARFF/SRE building.
- In May and June 2019, HW installed nine groundwater monitoring wells to delineate the vertical and horizontal extent of PFAS and 1,4-dioxane at the Airport and on adjacent hydraulically upgradient properties.
- In June 2019, eight groundwater samples were collected from newly installed groundwater monitoring wells HW-L, HW-K, HW-I (m), HW-I (d), HW-M, HW-D(d), HW-D (dd), and HW-N for PFAS.
- In July 2019, one groundwater sample was collected from the newly installed groundwater monitoring well HW-O for PFAS. One groundwater sample was collected from HW-L for 1,4-dioxane.
- In July 2019, two surface water samples were collected from Upper Gate and Lewis Ponds for PFAS analysis.
- In August 2019, four groundwater samples were collected from monitoring wells HW-N, HW-A(d), HW-O, and HW-1 to evaluate potential sources of 1,4-dioxane entering the Airport from unknown upgradient sources(s). One groundwater sample was also collected from groundwater monitoring well HW-E for PFAS.
- In August 2019, soil sample DL 11 (0-1) was collected from the Deployment Area.
- In August 2019, six spray water samples were collected from discharge locations on a fire truck at the Airport. The samples were collected to verify that the valve mechanism that controls the mixing of AFFF with water was working appropriately. PFAS should not be detected in the spray water. Although the spray water is not considered drinking water,

PFAS was detected in each of the six samples collected above the GW-1 standard.

- On September 27, 2019, HW collected groundwater samples from six monitoring wells located on the Airport for 1,4-dioxane analysis.
- In November 2019, the Airport replaced the valve mechanism in the fire truck to ensure that AFFF was no longer mixing with the water despite the mechanism not being engaged. In December 2019, HW resampled the six discharge locations from the fire truck at the Airport. PFAS was detected at various concentrations at each location, but all were below the GW-1 standard.
- Between May 5th and May 21st, 2020, HW collected 16 groundwater samples PFAS analysis.
- Between May 5th and May 13th, 2020, HW collected groundwater samples from four monitoring wells for 1,4-dioxane analysis.
- Between August 17, 2020 and September 28, 2020, HW oversaw the installation of the asphalt cap in the ARFF/SRE Building Area and the geomembrane cap in the Deployment Area. Approximately 850 cubic yards of soil from the ARFF/SRE Building Area generated during cap construction was used for grading and shaping of the cap area in the Deployment Area. This soil was completely covered by the geomembrane. Refer to IRA Status Report 8 for additional details.
- Between September 14th and September 24th, 2020, HW and Desmond Well Drilling installed 13 monitoring wells.
- On September 17, 2020, HW collected groundwater samples from the three Maher Wells (ME-1 through ME-3) for PFAS analysis.
- Between September 14th and September 30th, 2020, HW collected 23 soil samples for PFAS analysis.
- Between October 1 and October 7, 2020, HW collected groundwater samples from 16 monitoring wells for PFAS.
- On October 2 and 7, 2020 HW collected groundwater samples from four monitoring wells for 1,4-dioxane analysis.
- Between November 5 and 6, 2020, HW collected five groundwater samples for PFAS analysis.
- On November 17, 2020, HW collected two roof samples (rubber membrane and asphalt shingle) from the ARFF/SRE building for SPLP PFAS. The testing was completed to determine if roofing materials were a potential source of PFAS in groundwater through stormwater infiltration. PFAS was detected in each of the samples collected. Although the leachate is not considered drinking water, the concentration of the MassDEP Sum of 6 was below the Method 1 GW-1 and GW-3 standards.
- On February 18 and 19th, 2021 HW conducted hydraulic conductivity testing at three

monitoring well locations. Refer to the Revised Phase II Report for additional details.

- Between March 17th and March 19, 2021, HW collected 21 groundwater samples for PFAS analysis as part of the first round of post-cap semiannual monitoring.
- Between April 5th and April 7th, 2021, HW and Desmond Well Drilling installed monitoring wells HW-U(s), HW-U(m), HW-W(m), HW-W(d), and HW-W (dd).
- Between April 6th and 19th, 2021, HW collected 17 soil samples for total organic carbon (TOC) analysis. The TOC samples were collected from various depths between the ground surface and 65 feet below grade. The TOC data was used to determine plume migration.
- On April 19, 2021, HW sampled the recently installed monitoring wells HW-U(s), HW- U(m) HW-W(m), HW-W(d), and HW-W (dd) for further analysis of PFAS compounds in groundwater.
- On September 7, 2021, HW and New England Geotech installed monitoring wells HW- X(s) and HW-X(m). The monitoring wells were installed adjacent to the former ARFF/SRE Building.
- On September 7, 2021, HW collected a soil sample from HW-X (m) and submitted it for PFAS analysis. None of the MassDEP six regulated PFAS compounds were detected above the laboratory method detection limit.
- On September 10, 2021, HW collected groundwater samples from HW-X (s) and HW- X(m) and submitted them for PFAS and 1,4-dioxane analysis.
- Between September 1 and September 11, 2021, HW collected 26 groundwater samples as part of the second round of post cap semiannual monitoring.
- On September 10, 2021, HW collected two groundwater samples from monitoring wells HW-E and HW-J located in the Deployment Area for 1,4-dioxane. 1,4-dioxane was not detected above the laboratory reporting limit.
- On March 2nd and 4th, 2022, HW collected six surficial composite soil samples from Runway 6-24 and submitted them to Alpha Analytical for PFAS analysis. Redevelopment of Runway 6-24 began in April 2023 and was completed in October 2023. The soil testing was conducted to evaluate how soil removed from the areas around the runway would need to be managed if they were taken off site. None of the MassDEP six regulated PFAS compounds were detected above the applicable Method 1 Standard.
- Between March 15th and March 31st, 2022, HW collected 29 groundwater samples for PFAS analysis.
- On May 18th, 2022, HW collected three groundwater samples for PFAS analysis.
- Between July 29 and August 8th, 2022, HW collected eight groundwater samples for PFAS analysis.

- Between October 31 and November 2, 2022, HW collected groundwater samples from the three Maher Wells (ME-1, ME-2 and ME-3) and monitoring wells HW-W(m), HW-I(s), HM-I(m), HW-I(d), HW-3, HW-P(s), and HW-P(m) for PFAS analysis.
- On February 2, 2023, HW collected groundwater samples from the three Maher Wells (ME-1, ME-2 and ME-3) and monitoring wells HW-I(s) and HW-P(s) for PFAS analysis.
- On March 16 and 17, 2023, HW and Desmond Well Drilling reinstalled monitoring wells HW-H and HW-R (Figure 4) that were destroyed by the Lawrence Lynch Corporation (road work construction company) during the Mary Dunn Way road paving/sewer line installation project. It is estimated that the wells were destroyed during the week of July 12, 2022. It should be noted that these wells are used to track the groundwater plume from the Deployment Area. The soils in the vicinity of Mary Dunn Way have not been impacted by the Airports historic use of AFFF. Refer to Figure 2, soil samples A7, A8, A9, A11, A12, D10, D11, DL19, DL20, and DL21.
- The Airport submitted groundwater samples from HW-I(s), HW-I(m), HW-I(d) and ME-1 through ME-3 (Maher Wells 1 through 3) for forensic PFAS analysis at Battelle. As indicated in previous reports, HW-I(s) is representative of the Airports PFAS Plume, and HW-I(m) and HW-I(d) are representative of upgradient non-airport related sources (i.e., the Barnstable Fire Training Academy and others). The forensic report prepared by Battelle concluded that sample ***"HW-I(d) seems most like the ME samples"***.
- The final quarterly sampling event of the Maher Wells (ME -1 through ME-3) occurred in May 2023.
- HW collected groundwater samples from nine monitoring wells for PFAS in June 2023, and from three monitoring wells in December 2023.
- HW will continue to sample select wells in the vicinity of the Deployment Area, ARFF/SRE Building and other select locations bi-annually as part of the on-going evaluation of the cap and PFAS plume monitoring during Phase V (see additional details below in Section 9).

Analytical results are included on Table 2 through 9, and laboratory reports not previously submitted to the MassDEP are included in Appendix B. PFAS in groundwater trend graphs for select wells in the vicinity of the caps are included in Appendix C.

4.0 IRA COMPLETION STATEMENT

Pursuant to 310 CMR 40.0427, an IRA shall be considered complete when the release, threat of release and/or site conditions which give rise to the need for that IRA, as described in 310 CMR 40.0412, have been assessed and, where necessary, remediated in a manner and to a degree that will ensure, at a minimum:

- The accomplishment of any necessary stabilization of site conditions.

As indicated above and in the Final Phase IV Report, the installation of the two caps have significantly decreased the concentration of total PFAS in the vicinity of the Deployment Area and ARFF/SRE Area as indicated on the time plots included in Appendix B. As such, the majority of the PFAS impacted soil at the Airport is currently capped and stabilized. Groundwater monitoring and cap inspections will continue bi-annually as part of Phase V to document that disposal site is stable.

- The elimination or control of any Imminent Hazards to health, safety, public welfare and the environment, without the continued operation and maintenance of Active Remedial Systems or Active Exposure Pathway Mitigation Measures or the incorporation of ongoing response actions to eliminate or control the Imminent Hazard into the Phase IV Remedy Implementation Plan for the disposal site.

Considering that no private drinking water wells have been identified hydraulically downgradient of the Airport, and that the Town of Barnstable is providing drinking water that meets the required state drinking water standards and guidelines for PFAS, an imminent hazard as defined by 310 CMR 40.0006 is currently being prevented. Additionally, the Airport is compensating the Town of Barnstable for its allocated portion of responsibility for groundwater treatment that is occurring at the Maher Wells. This payment ensures that the burden of treatment at the Maher Wells resulting from the PFAS impacts from the Airport (Maher Well 2 only) does not fall on the public.

- The completion of time-critical measures addressing the elimination, prevention or mitigation of Critical Exposure Pathway(s) as documented with an LSP Opinion concluding that:
    - The Critical Exposure Pathway(s) have been eliminated using passive measures;
    - A feasibility study, as specified at 310 CMR 40.0414(3) and (4), supports the conclusion that it is not feasible to eliminate, prevent, or mitigate the Critical Exposure Pathway(s);
    - A feasibility study, conducted as part of a Phase III evaluation of Comprehensive Remedial Alternatives as specified in 310 CMR 40.0860, supports the conclusion that it is not feasible to eliminate, prevent, or mitigate the Critical Exposure Pathway(s) as part of the Comprehensive Remedial Alternative; or
    - Mitigation of Critical Exposure Pathway(s) is continuing by incorporation of ongoing response actions to address the Critical Exposure Pathway(s) into the Phase IV Remedy Implementation Plan for the disposal site.

IRA activities have been completed including the installation of two caps to prevent the further leaching of PFAS into groundwater. The Maher Wells groundwater treatment system operated by the Town of Barnstable is providing treated drinking water to the community eliminating the risk associated with ingestion of drinking water containing PFAS above the MassDEP regulatory limits. It should be noted that based on environmental forensics and fate and transport mechanisms documented in the Updated Phase II Report and Final Phase IV Report, the Airports PFAS plume

impacted the Maher Wells (ME-2 only) after the Town of Barnstable installed a treatment system designed to treat for PFAS. As such, mitigation of the Critical Exposure Pathway is being managed as part of Phase V activities.

The IRA has been successful in delineating the nature and extent of PFAS impacts in soil and groundwater relating to the Airports historic use of AFFF. Additionally, the Airport has reduced the potential for PFAS to leach into the underlying groundwater from its two source areas (ARFF/SRE Building Area and Deployment Area) and has discontinued the application of AFFF with the exception of an emergency situation.

Pursuant to 310 CMR 40.0427(5), the LSP Opinion, certification of submittal, and indication that the IRA is complete and Phase V activities will be conducted as part of the Comprehensive Response Action are set forth on the Comprehensive Response Action Transmittal Forms (BWSC-105 and BWSC-108) being submitted to the MassDEP concurrently with report.

5.0 REMEDIAL WASTE FROM THE IRA AND PHASE IV

Soil

As set forth in Final Phase IV Report, soil caps were previously installed at the Site and details regarding soil management relating to the cap construction were included in the *Immediate Response Action Plan Status Report 8*. Any future soil excavation within the areas indicated on Figure 5 as "Area of PFAS Impacts in Soil" will be documented in a Release Abatement Measure (RAM) Plan submitted to the MassDEP consistent with the MCP. There is currently no remedial waste stored at the Airport.

Groundwater

As part of the groundwater treatment process at the Maher Wells Drinking Water Plant (the Plant), granulated activated carbon (GAC) will require periodic replacement and disposal. The replacement and disposal of the GAC will be completed by the Town of Barnstable/Hyannis Water System staff consistent with its operating requirements and MassDEP registration (Appendix D). HW will not be involved in the operation, management or disposal of materials associated with the Plant considering it is adequately regulated under the MassDEP.

6.0 PHASE IV REMEDY IMPLEMENTATION

Site specific engineering concepts and design criteria used for the design and construction of the PFAS caps and treatment technologies utilized by the Plant were documented within the Final Phase IV Report which was submitted to MassDEP by HW in January 2023. The goals of remedial action, including performance requirements of the remedial systems, the requirements for achieving a

Permanent or Temporary Solution (whichever is applicable) under 310 CMR 40.1000 and the projected timeframe, based on available information, for achieving such Permanent or Temporary Solution was included in the Final Phase IV Report.

Based upon the evaluation of remediation technologies provided in Phase III, the selected remedy consisted of treatment of groundwater at the Maher Wells and implementation of soil caps. Groundwater monitoring and cap inspections will continue to be conducted bi-annually and documented in future Phase V Status Reports until a Permanent or Temporary Solution can be achieved.

6.1 Goals of the Remedy

Soil Caps

The goal of the soil caps is to reduce the infiltration of PFAS from soil into groundwater. The caps were installed in 2020 at the locations indicated on Figure 3. The caps have significantly reduced the concentrations of total PFAS in groundwater in the vicinity of the Deployment Area and ARFF/SRE Area, as indicated on Table 3 and the time plots presented in Appendix C.

Fluctuations in the concentration of PFAS is expected as the groundwater level rises and falls over the next several years and contaminants are flushed from the capillary fringe zone. After flushing is complete, concentrations associated with the Airports PFAS Plume are expected to decline. The effectiveness of the caps will be documented through the collection of groundwater samples until a Permanent or Temporary Solution can be achieved. The caps will be inspected twice annually and maintained as necessary until a Permanent or Temporary Solution can be achieved. Assuming that the future Permanent or Temporary Solution relies on the caps to maintain a level of no significant risk, the caps will be maintained and inspected in the future in accordance with an Activity and Use Limitation (AUL). Any future construction within the estimated extent of PFAS impacted soils indicated on Figure 5 will be conducted under a RAM.

Groundwater Treatment

The goal of the groundwater remedial action is to reduce the concentration of PFAS in groundwater and to provide safe drinking water to the Town of Barnstable. The Town of Barnstable began construction of the Plant in 2019. The Plant was designed by Tata and Howard, Inc. for the treatment of PFAS, 1,4-dioxane, iron, and manganese. The Plant utilizes green sand filtration, advanced oxidation, and GAC.

The plant has a design capacity of 1,500 gallons per minute and removes PFAS with granular GAC filtration; 1,4-Dioxane by advanced oxidation with peroxide and ultraviolet light (UV); and iron and manganese by greensand filtration. The plant was completed in 2020 with the design reviewed and approved by MassDEP. The plant has been providing the Town of Barnstable with drinking water

that meets state and federal drinking water requirements as documented in the Annual Water Quality Report from 2022 (Appendix E).

Based on contaminant migration fate and transport mechanisms incorporated into a USGS MODFLOW Model (included in the Final Phase IV dated January 2023) it is expected that groundwater impacts from the Airports PFAS plume in all impacted areas will be less than the

GW-1 standard by 2031. The model also suggests that PFAS impacts at the Maher Wells would not exceed the current GW-1 standard (0.02 ug/l) if the Airports PFAS plume was the only source of PFAS impacting them.

It should be noted that the Maher treatment plant became operational in October 2020. The Airport PFAS plume was not detected in Maher Wells prior to the Plant becoming operational. The Airports PFAS plume was detected in Maher Well 2 in July 2022. The Airports PFAS signature has not been detected in the other two Maher Wells (ME-1 and ME-3) which is consistent with MODFLOW modeling previously documented in the Final Phase IV.

Cap inspection and groundwater monitoring has been reported in IRA status reports. Future reports of the remedial action will be documented in Phase V Status Reports submitted bi- annually. The first Phase V Status Report is included in Section 10.0.

7.0 PHASE IV FINAL INSPECTION REPORT

Pursuant to 310 CMR 40.0878, a final inspection must be conducted by the Licensed Site Professional (LSP) of record to ensure that:

- The Comprehensive Remedial Action has been constructed in accordance with construction plans under 310 CMR 40.0874(3)(c) of the Phase IV Remedial Implementation Plan or appropriate modification to such plans; and

- Following initial implementation and operation and any modifications or adjustments necessary to optimize the performance of remedial systems, the Comprehensive Remedial Action is meeting projected design standards.

The Comprehensive Remedial Action activities were substantially completed in a manner consistent with the specifications set forth in the Final Phase IV Report dated January 2023 and the Comprehensive Response Actions are meeting projected design standards.

8.0 PHASE IV COMPLATION STATEMENT

Pursuant to 310 CMR 40.0879(2), the LSP Opinion, certification of submittal, and indication that the Phase IV is complete and that Phase V activities will be conducted as part of the Comprehensive Response Action is set forth on the Comprehensive Response Action Transmittal Form (BWSC-108) being submitted to the MassDEP concurrently with this report.

9.0 PHASE V OPERATION, MAINTENANCE, AND MONITORING

Pursuant to 310 CMR 40.0891(1), the provisions of Phase V shall apply to disposal sites where Phase IV response actions have been completed and operation, maintenance and/or monitoring (OMM) of the Comprehensive Remedial Action is necessary to achieve a Permanent or Temporary Solution under 310 CMR 40.1000.

Phase IV response actions have been completed at the Site and monitoring of the Comprehensive Response Action is required to achieve a Permanent or Temporary Solution. An OMM plan outlining additional monitoring activities to achieve a Permanent or Temporary Solution is set forth below.

9.1 Operation, Maintenance, and Monitoring Plan

Soil Caps

The two soil cap areas at the Airport (Figure 3) will be inspected bi-annually. The first Phase V inspection is included in Section 10.2 The cap inspections will include the following:

- Asphalt Cap: The asphalt cap will be inspected by the LSP of Record to document that it is free of any cracks or significant depressions. Crack sealing, if needed, is routinely completed as part of the Airports general asphalt management program. The cap area will also be monitored for any significant depressions. Significant depressions that result or could result in damage to the asphalt cap will be noted and fixed, as necessary. Photographic documentation of the asphalt cap area will be included in Phase V Status Reports.
- Geomembrane: The geomembrane cap will be inspected by the LSP of Record to document that the protective soil cover is free of any depressions or erosion. Significant depressions or erosion that could result in damage to the geomembrane cap will be noted and fixed, as necessary. Photographic documentation of the geomembrane cap area will be included in Phase V Status Reports.

Groundwater Treatment

The groundwater treatment system is managed by the Town of Barnstable/Hyannis Water System consistent with MassDEP requirements. As part of the Plant's compliance testing, samples of the treated groundwater are collected quarterly and submitted to a laboratory for analysis of multiple contaminants including PFAS. The Plant also collects process control samples monthly from multiple locations throughout the plant process including the untreated groundwater, before filtration, after the lead GAC vessel, after the lag GAC vessel and at the treated tap. This information is used to adjust the treatment process as necessary and to

determine when GAC replacement is needed. In addition, the Plant has an emergency generator in the event of a power failure. A copy of the 2024 Registration and 2022 water quality report are included in Appendix D and E, respectively.

Groundwater Monitoring

Groundwater monitoring will be conducted bi-annually to monitor the effect of the soil caps on the Airports PFAS Plume. At a minimum, groundwater samples will be collected from the following wells for PFAS analysis:

- HW-I(s)
- HW-I(m)
- H-I(d)
- HW-S (s)
- HW-S (m)
- HW-P(s)
- HW-P(m)
- HW-302
- HW-3
- ME-1 (untreated intake water from Maher Drinking Water Well 1)
- ME-2 (untreated intake water from Maher Drinking Water Well 2)
- ME-3 (untreated intake water from Maher Drinking Water Well 3)

Groundwater sampling will occur in May and November. The next groundwater sampling event will occur in May 2024. Additional wells beyond those described above may be sampled and/or installed at the discretion of the LSP and documented in future monitoring reports.

9.2 Inspection and Monitoring Reports

Groundwater monitoring and bi-annual cap inspections will be completed to document the cap effectiveness and track the plume migration as part of Phase V until a Permanent or Temporary Solution can be achieved. The Plant will continue to be operated by the Town of Barnstable/Hyannis Water System consistent with its MassDEP permit requirements.

Pursuant to 310 CMR 40.0892, Phase V Status Reports will be submitted to MassDEP every six months.

10.0 PHASE V STATUS REPORT

10.1 Groundwater Monitoring

Details concerning field investigations conducted between October 2023 and April 2024 are summarized below.

- On December 5 and December 6, 2023, HW collected groundwater samples from the three Maher Wells (ME-1, ME-2 and ME-3) and monitoring wells HW-I(s), HW-I(m), H-I(d), HW-S (s), HW-S (m), HW-P(s), HW-P(m), HW-302, HW-3 for PFAS analysis.

Analytical results are included on Table 2, and laboratory reports are included in Appendix A. PFAS in groundwater trend graphs for select wells in the vicinity of the caps are included in Appendix C.

HW will continue to sample select wells in the vicinity of the Deployment Area, ARFF/SRE Building and other select locations bi-annually as part of the on-going evaluation of the cap and PFAS plume monitoring.

10.2 Bi-Annual Cap Inspection and Cap Performance Monitoring

HW has inspected the two caps bi-annually since the installation was completed. The first Cap inspection was conducted in March 2021. The most recent cap monitoring event was conducted on March 19, 2024. The asphalt cap was free of significant cracks. A slight depression was noted in the central portion of the ARFF/SRE Cap, where mobile refueler trucks are staged (right photograph). This area will be monitored to determine if corrective actions are necessary.

HW inspected the geomembrane cap on March 19, 2024, in the vicinity of the Deployment Area. The sand and loam protective layer over the geomembrane cap were intact with no signs of significant erosion as indicated in the photos below.

HW will continue to inspect the two cap areas every six months and collect groundwater samples from select existing monitoring wells to document the effectiveness of the caps. These details will be included in future Phase V Status Reports submitted every six months. The next Phase V Status Report will be submitted in October 2024.

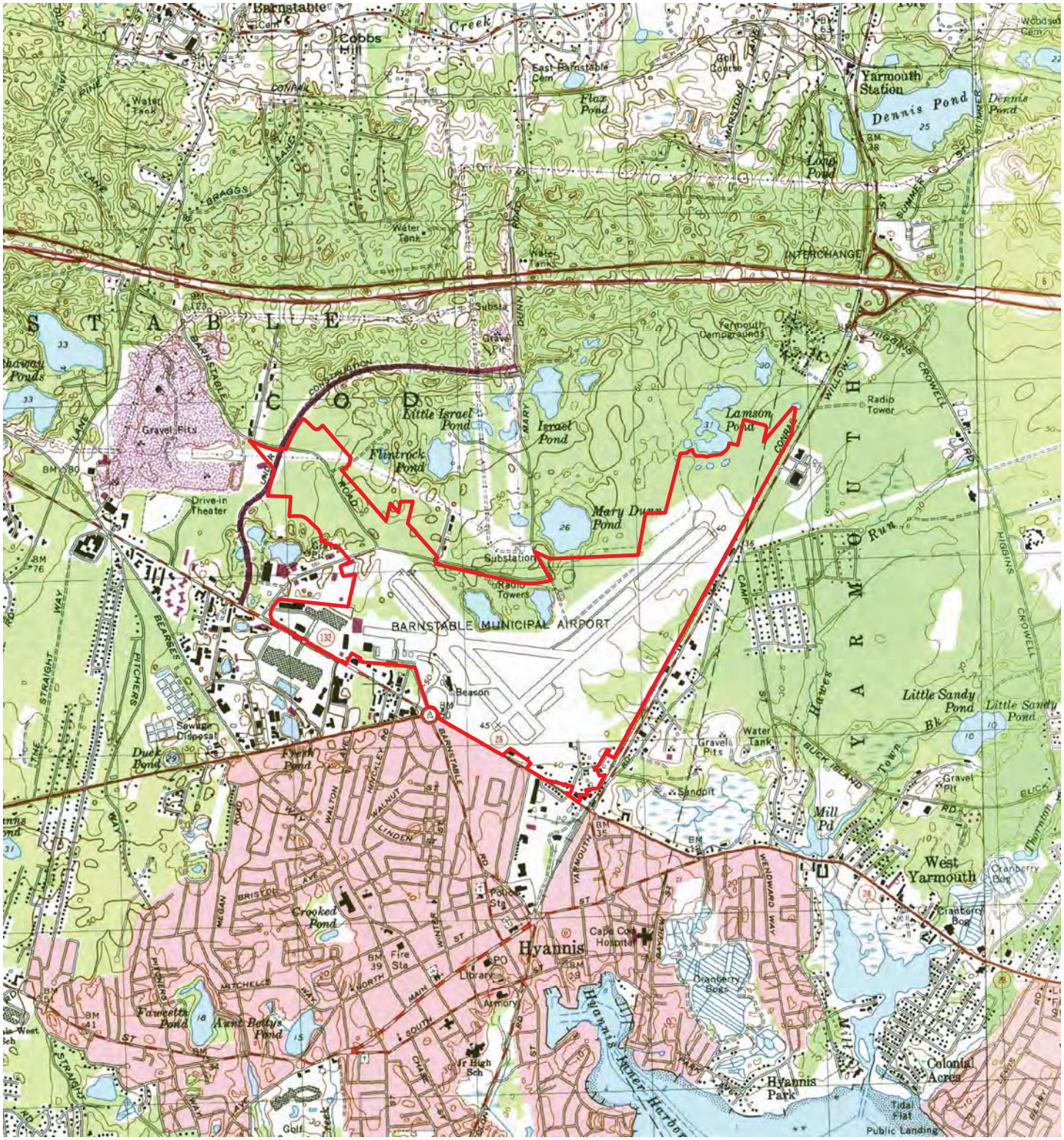
11.0 PUBLIC INVOLVEMENT

Considering this is the last phased report until a Permanent or Temporary Solution is submitted, a IRA Status Report 14, DRAFT IRA Completion Statement, and DRAFT Phase IV Completion Report was submitted to MassDEP and notifications were distributed to all persons identified on Table 1, Community Notification List October 11, 2023. The Airport sent a subsequent notification on November 13, 2023 to all persons identified on Table 1, Community Notification List, about an in person meeting on December 18, 2023. After the meeting, the Airport provided an additional 45-day review period for the public and MassDEP to review the PFAS related investigation completed by the Airport. A Phase V Status report has also been included in this Report due to the extended comment period and the required regulatory submittals needed to satisfy the requirements of the Massachusetts Contingency Plan. Questions and Comments received by the public (the Siera Club, Hyannis Park Civic Association and Mr. Thomas Cambareri) are detailed above. Copies of the submitted questions/comments are included in Appendix A.

Pursuant to 310 CMR 40.0880, notification of the Final IRA Status Report 14, IRA Completion Statement, Final Phase IV Completion Report, and Phase V Status Report will be provided to all individuals on Table 1. This includes the Chief Municipal Officer and the Board of Health for both Barnstable and Yarmouth.

FIGURES

1 – USGS Locus
2 – Estimated Airport AFFF Disposal Site Boundary
3 – Soil Sampling Locations
4 – Surface Water and Monitoring Well Locations
5 – Sum of Six PFAS in Soil
6 – Background PFAS Sample Locations
7 – Surficial Soil Sampling Locations
8 – 1,4 Dioxane Results in Groundwater
9 – TOC Sample Locations



Document Path: H:\Projects\HYA\11072 (697 Barnstable Airport)\GIS_Maps\Maps\USGS_Locus_20130815.mxd

Legend

Airport Property Line

*Hyannis Topographic Quadrangle

N

0.5 Miles

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USGS Locus
Cape Cod Gateway Airport
Hyannis, MA

Date: 4/17/2018

Figure 1

Flint Rock Pond
Barnstable Fire Training Academy
GP-5
MD-3
Off-Site BFTA PFAS Plume Impacting Airport and Others
Runway 15/33
MD-2
Mary Dunn Pond
MD-1
Runway 6/24
Off-Site PFAS Plume Impacting Airport and Others
1991 Drill Location
1981 Crash Site
Historic Deicing area
Upper Gate Pond
Air-1
Lewis Pond
Yarmouth Road
Deployment Area/ Deployment Area Cap
ARFF/SRE Building Area Cap
ARFF/SRE Building Area
2016 Crash Site
Historic Deicing Area
Oil/Water Seperator
Barnstable Road
Current Deicing Area
ME-1
ME-3
ME-2
Maher Treatment Plant
Off-Site 1,4-Dioxane Plume Impacting Airport and Others
Estimated Disposal Site Boundary
(Based on Maximum PFAS Plume Model Migration above 0.02 ug/L in Phase IV Report)

Legend

- Airport Monitoring Wells
- Barnstable Fire Training Academy Monitoring Wells
- Soil Samples
- Surface Water Samples Completed by Airport
- Drinking Water Wells
- Barnstable Municipal Airport Property Boundary
- Groundwater Contours
- Estimated Extent of Airport AFFF PFAS Plume
- Estimated Extent of Off-Site BFTA Plume
- Estimated Extent of Off-Site 1,4-Dioxane Plume
- Estimated Extent of Off-Site 1,4-Dioxane Plume

N

0 750

1 in = 779 feet

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Estimated Airport AFFF Disposal Site Boundary
Cape Cod Gateway Airport
Hyannis, MA

Date: 11/8/2022 Figure 2

* Cape Cod Commission (CCC) Groundwater Contours

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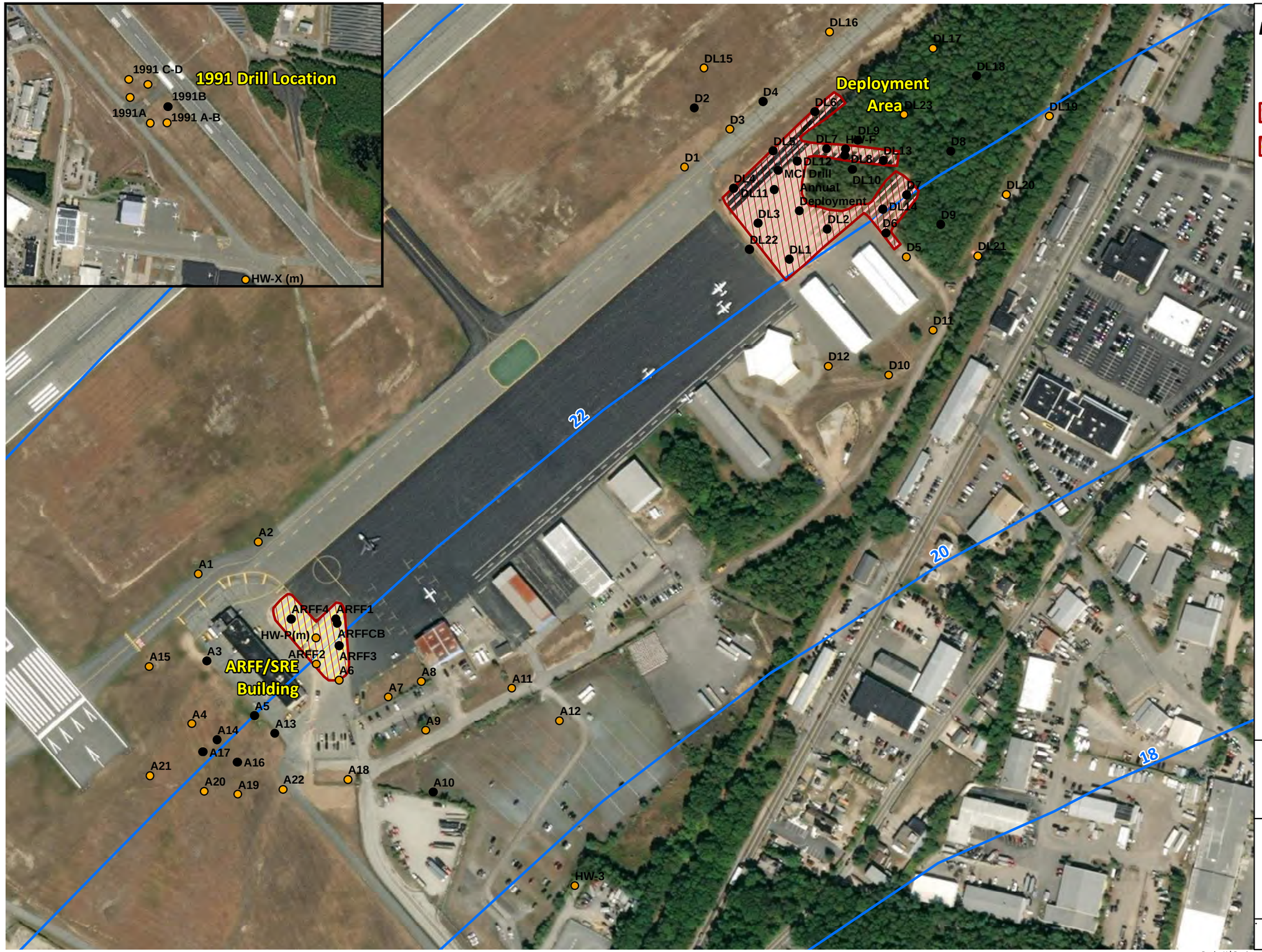

Legend

- Groundwater Contours*
- Deployment Area Liner Cap
- ARFF Asphalt Cap
- Soil Sample Location below Method 1 S-1/GW-1 Standard for all Six PFAS Compounds
- Soil Sample Exceeding Method 1 S-1/GW-1 for at least one of the six regulated PFAS compounds

Method
PFHpA = 0.5 ug/kg
PFHxS = 0.3 ug/kg
PFOA = 0.72 ug/kg
PFNA = 0.32 ug/kg
PFOS = 2 ug/kg
PFDA = 0.3 ug/kg

Soil Sample Location for TOC

N

0 225

1 in = 225 feet

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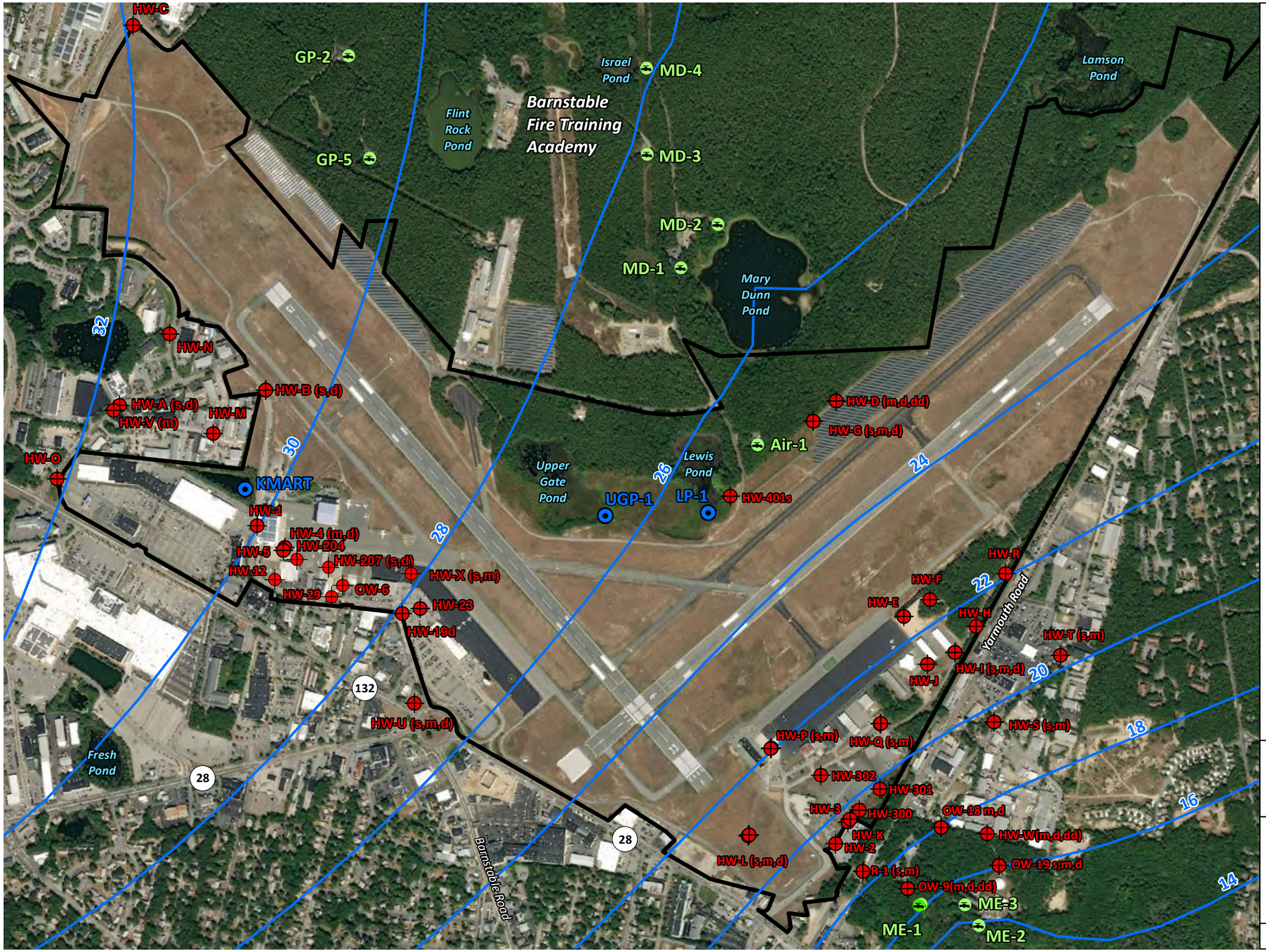
Soil Sample Locations
Barnstable Municipal Airport
Hyannis, MA

Date: 10/4/2021 Figure 3

** Cape Cod Commission (CCC) Groundwater Contours*

Path: K:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\Soil Sample Locations.mxd



Legend

- PFAS Monitoring Wells
- Surface Water Samples Completed by Airport
- Drinking Water Wells
- Barnstable Municipal Airport Property Boundary
- Groundwater Contours*

N

0 750

1 inch = 750 feet

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Surface Water and Monitoring Well Locations
Barnstable Municipal Airport
Hyannis, MA

Date: 10/4/2021 Figure 4

* Cape Cod Commission (CCC) Groundwater Contours

Path: K:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\200408_Well Locations.mxd

Estimated Extent of Deployment Area PFAS Impacts in Soil

Estimated Extent of ARFF/SRE Area PFAS Impacts in Soil

DL16 DL15 DL17 DL18 DL25 DL19 DL20 DL21 DL14 DL13 DL9 DL7 DL8 DL12 DL10 DL11 DL6 DL3 DL2 DL22 DL1 DL5 D1 D2 D3 D4 D5 D10 D11 D12 MCL Boundary Approximate Deployment

A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20 A21 A22 ARFF4 ARFF1 ARFFCB ARFF3 ARFF2 HW-P(m) HW-3

24 22 20 18

N

0 225

1 in = 225 feet

Legend

- Groundwater Contours*
- Samples exceeding MassDEP S-1/GW-1 Standard
- ARFF Asphalt Cap
- Deployment Area Liner Cap

Maximum Concentration of Total PFAS Detected in Soil (ug/kg)

- 0 - 0.5
- 0.5 - 1
- 1 - 5
- 5 - 20
- 20 - 100
- 100 - 200
- 200 - 500
- 500 - 1000
- 1000 - 2000
- 2000 - 6000

Notes:
1. Multiple circles indicates samples at different depths. The larger the circle, the deeper the sample.

2. Total PFAS is the sum of all laboratory reported PFAS analytes.

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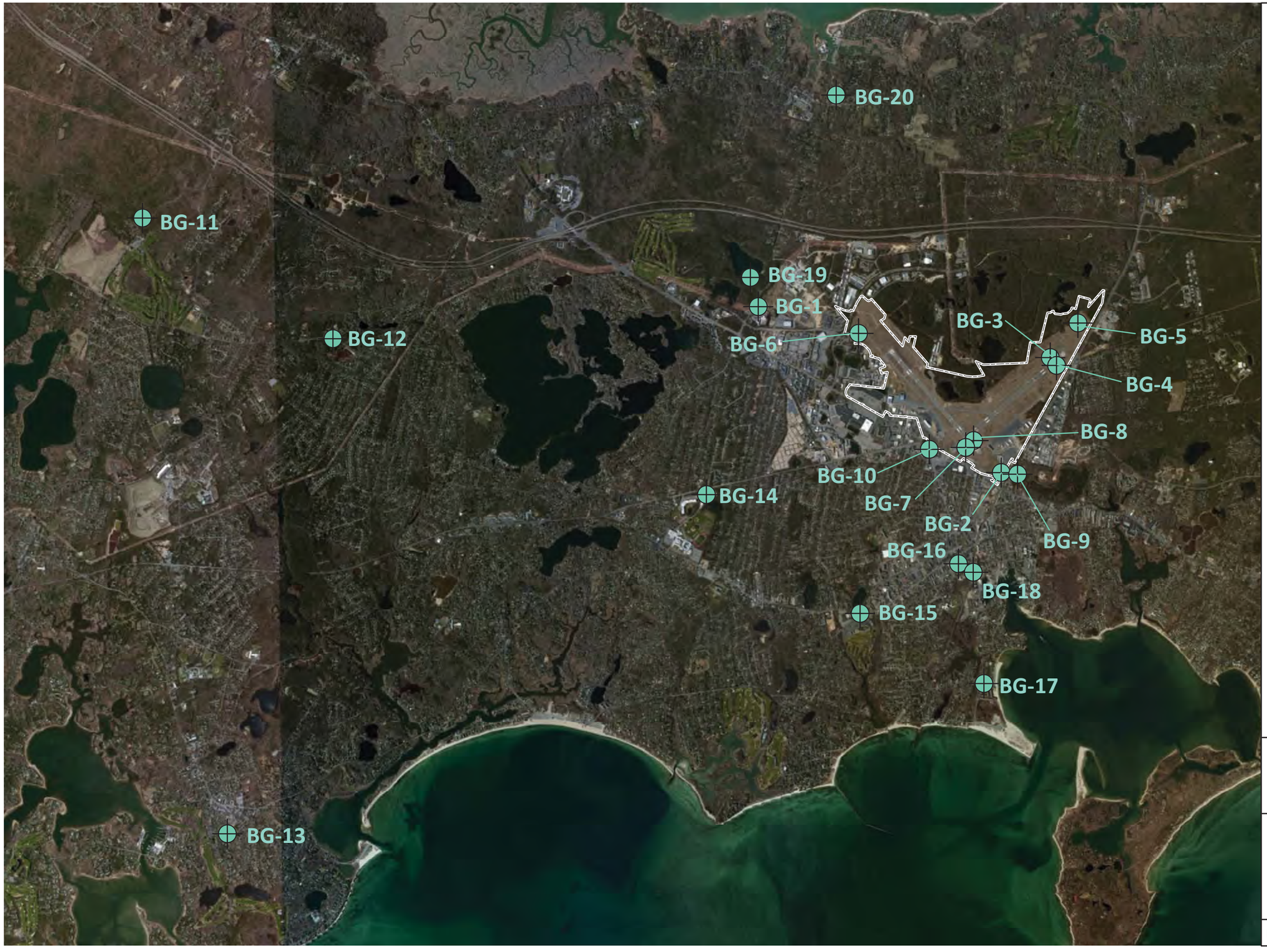
Sum of Six PFAS in Soil
Cape Cod Gateway Airport
Hyannis, MA

Date: 8/11/2021 Figure 5

** Cape Cod Commission (CCC) Groundwater Contours*

Path: H:\Projects\HYA\21084 PFOS Phase III\GIS\Maps\201030_SoilPFASTotalZoom.mxd



Legend

- Background PFAS sample locations
- Barnstable Municipal Airport Property Boundary

N

0 1,750

Feet

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Background
PFAS Sample Locations
Cape Cod Gateway Airport
Hyannis, MA

Date: 11/25/2020 Figure 6

Path: H:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\180110_PFOS_BackgroundSampleLocations.mxd

Legend

- Soil Sample Location 6-24 A Composite (0-1')
- Soil Sample Location 6-24 A Composite (1-2')
- Soil Sample 6-24 B (0-1') Composite Locations
- Soil Sample 6-24 B (1-2') Composite Locations
- Soil Sample 6-24 C (0-1') Composite Locations
- Soil Sample 6-24 C (1-2') Composite Locations
- Barnstable Municipal Airport Property Boundary

N

0 375

1 inch = 375 feet

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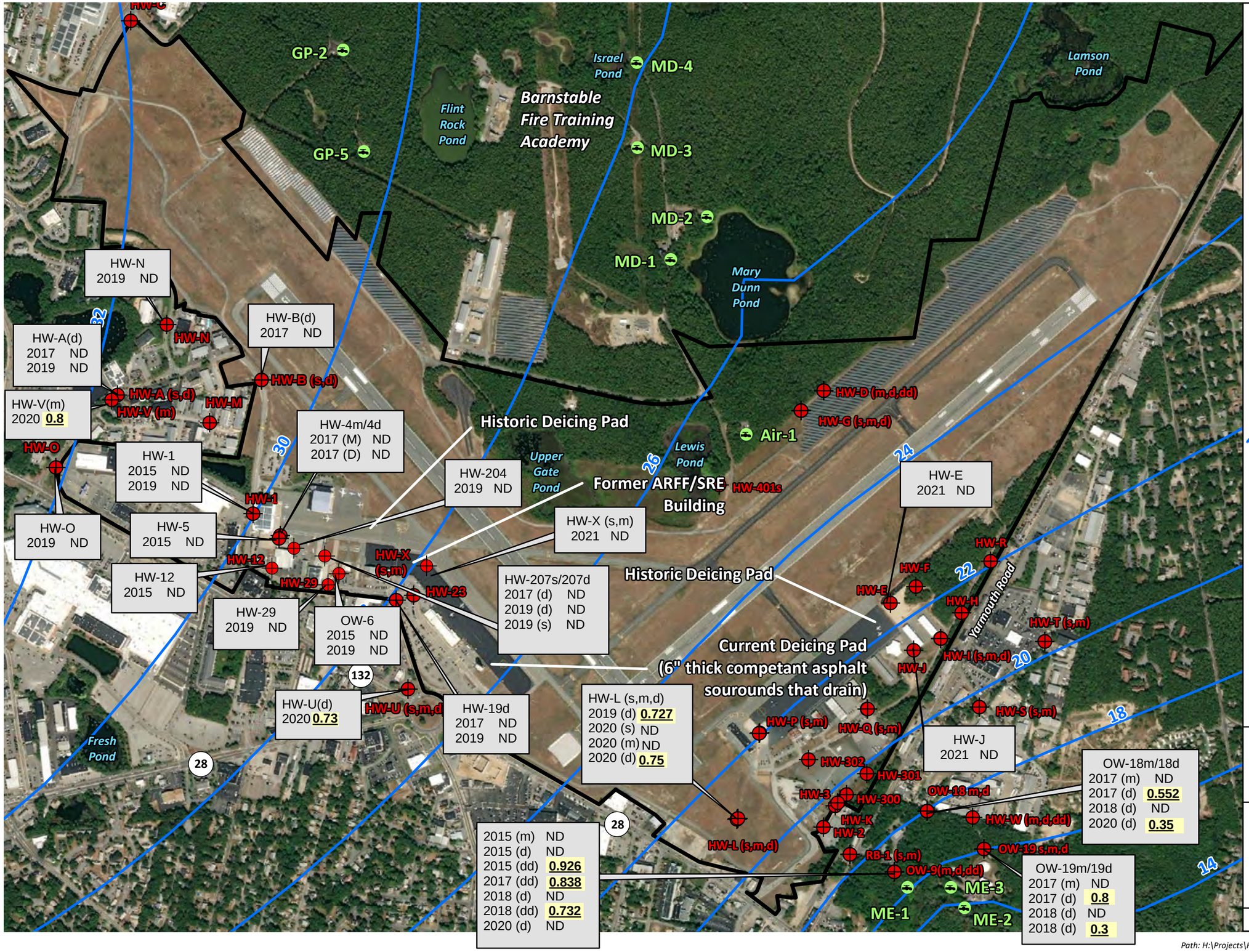
Surficial Soil Sampling
Runway 6/24 Locations
Cape Cod Gateway Airport
Hyannis, MA

Date: 3/17/2022 Figure 7

* Cape Cod Commission (CCC) Groundwater Contours

Path: H:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\220302_Surficial Soil Sampling.mxd



Legend

- Monitoring Wells
- ND — Not detected by the laboratory above the reporting limit
- 0.2 — 1,4 Dioxane Below MassDEP Limit (0.3 ug/L)
- **0.8** — 1,4 Dioxane Above Method 1 GW-1 Standard (0.3 ug/L)
- Drinking Water Wells
- Barnstable Municipal Airport Property Boundary
- Groundwater Contours

N

0 750

1 inch = 750 feet

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1,4 Dioxane Results In Groundwater Cape Cod Gateway Airport Hyannis, MA

Date: 10/1/2021

Figure 8

Path: H:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\210409_DioxaneMap.mxd

Legend

- Groundwater Contours
- Approximate Location of TOC Sample
- Deployment Area Liner Cap
- ARFF Asphalt Cap

N

0 400

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TOC Sample Locations
Cape Cod Gateway Airport
Hyannis, MA

Date: 8/9/2021 Figure 9

** Cape Cod Commission (CCC) Groundwater Contours*

Path: K:\Projects\HYA\17027 BMA PFOS 1-4 IRA\GIS\Maps\TOC Sample Locations.mxd

TABLES

1 – Community Notification List
2 – Soil Results for PFAS Compounds
3 – Groundwater Results for PFAS Compounds
4 – 1,4-Diozane Groundwater Results
5 – AFFF Concentrate Analytical Results
6 – SPLP Results
7 – Background PFAS Levels in Soil and Soil Stockpile Samples
8 – Surface Water Results for PFAS
9 – Ratio of Stable Isotopes Oxygen-18 and Hydrogen-2
10 – Fire Truck Spray Water PFAS Results
11 – Total Organic Carbon Levels
12 – Runway 6/24 Soil Results

Table 1
Community Notification List
Cape Cod Gateway Airport Public Involvement Plan

NAME	ADDRESS
Brad Schiff	bschiff@pierce-cote.com
Bronwen Walsh	bwalsh@barnstablepatriot.com
Chanda Beaty	chanda123@yahoo.com
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Steve Seymour	steveseymour@comcast.net
Tom Cambareri	tomcambareri@gmail.com
Sue Phelan	suephelan@comcast.net
Chris Greeley	greeleyc@comcast.net
Laurie Ruszala	lruszala@yarmouth.ma.us
Paul phalan	phalanpaul@gmail.com>
Amanda Rose	504 Pitchers Way Hyannis, MA 02601
Angela Gallagher	MassDEP Southeast Regional Office Bureau of Waste Site Cleanup 20 Riverside Drive Lakeville, MA 02347
Anthony Alva	184 Mockingbird Lane Marstons Mills, MA 02646
Araceli Alcantara	67 Coolidge Road West Yarmouth, MA 02673
Arthur Beatty	699 Cotuit Road Marstons Mills, MA 02648
Bruce Murphy	Health Department Town of Yarmouth 1146 Route 28 South Yarmouth, MA 02664
Ronald Beaty	245 Parker Rd. West Barnstable, MA 02668
Rong Jian Liu	5 Fishing Brook Road Yarmouth, MA 02664
Scott Beaty	29 Washington Avenue West Yarmouth, MA 02673
Sue Phelan	Green Cape - PO Box 631 West Barnstable, MA 02668
Sylvia Laselva	358 Sea Street Hyannis, MA 02673
Vilson Kote	106 Betty's Path West Yarmouth, MA 02673

NAME	ADDRESS
Charlie Bloom	29 Oak Street Hyannis, MA 02601
Cheryl Osimo	MBCC PO Box 202 Franklin, MA 02038
Christian Cook	37 Maple Avenue Hyannis, MA 02601
Daniel Knapik	Town Administrator Town of Yarmouth 424 Rte. 28 West Yarmouth, MA 02673
Daniel Santos	Department of Public Works Town of Barnstable 397 Main Street Hyannis, MA 02601
Darcy Karie	Conservation Commission Town of Barnstable 397 Main Street Hyannis, MA 02601
David Beaty	137 Harbor Bluff Road Hyannis, MA 02601
Eric Kristofferson	Hyannis Fire Department 95 High School Road Ext. Hyannis, MA 02601
Hans Keijser	Department of Public Works Town of Barnstable 397 Main Street
Janine Voiles	67 Coolidge Road West Yarmouth, MA 02673
Jeanny Fichter	1640 Old Stage Rd. West Barnstable, MA 02668
Karl Von Hone	Yarmouth Natural Resources Town of Yarmouth 424 Route 28 West Yarmouth, MA 02673
Luiz Gonzaga	92 High School Rd. Hyannis, MA 02601
M. Curley	39 Oak Ridge Road Osterville, MA 02655
Thomas McKean	Board of Health Town of Barnstable 397 Main Street Hyannis, MA 02601
Maia Fitzstevens	Silent Spring Institute 320 Nevada Street, Suite 302 Newton, MA 02460
Mainur Kote	106 Betty's Path West Yarmouth, MA 02673
Mainur Kote	106 Betty's Path West Yarmouth, MA 02673
Margo Pisacano	73 Harbor Bluff Road Hyannis, MA 02601
Mark Ells	Town Manager Town of Barnstable 397 Main Street Hyannis, MA 02601
Mark Forest	Board of Selectmen c/o Town Administrator's Office 1146 Route 28 South Yarmouth, MA 02664
Mr. Michael Gorenstein	Department of Public Works Town of Barnstable 397 Main Street
Nancy Wentzel-Johnson	PO Box 342 Hyannis, MA 02601
Peter Burke	Hyannis Fire Department 95 High School Road Ext. Hyannis, MA 02602
Richard A. Zoino	92 High School Road Hyannis, MA 02601
Richard Rougeau	306 Longbeach Road Centerville, MA 02632

Table 2. Soil Results for PFAS Compounds ug/kg

Sample Location				ARFF Building																																		
Sample ID	Method 1 Standard		UCL	ARFF1 (0-1')	ARFF1 (2')	ARFF1 (4')	ARFF2 (0-1')	ARFF3 (0-1')	ARFF3 (10-12)	ARFF4 (0-1')	ARFFCB (0-1)	A1 (0-1')	A2 (0-1')	A3 (0-1')	A4 (0-1')	A5 (0-1')	A5 (2-4')	A6 (0-1')	A7 (0-1')	A8 (0-1')	A9 (0-1')	A10 (0-1')	A11 (0-1')	A12 (0-1')	A13 (0-1')	A13 (0-1')	A14 (0-1')	A14 (0-1')	A15 (0-1')	A15 (0-1')	A16 (0-1')	A17 (0-1')	A18 (0-1)	A19 (0-1)	A20 (0-1)	A20 (2-4)	A21 (0-1)	A22 (0-1)	HW-P(M) [8-10]	HW-P(M) [18-20]	DL1(0-1')
Sample Date	S-1/GW-1	S-1/GW-3		6/20/2017	9/26/2017	9/26/2017	6/20/2017	9/26/2017	10/9/2018	9/26/2017	9/26/2017	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	9/24/2020	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	2/27/2019	9/29/2020	2/27/2019	5/13/2020	2/27/2019	5/13/2020	9/17/2020	9/17/2020	9/29/2020	9/24/2020	9/24/2020	9/24/2020	9/24/2020	9/29/2020	9/18/2020	9/18/2020	6/20/2017
Perfluoroheptanoic acid (PFHpA)	0.5	300	4,000	**0.82 J**	**1.8**	**0.66 J**	0.17 U	**0.60 J**	0.32 J	**0.75 J**	**0.60 J**	0.19 U	0.19 U	0.38 J	0.19 U	**1.1**	0.089 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	**<2.0**	0.396 J	**<1.9**	**0.51 J**	**<2.0**	0.21 U	0.067 J	**1.07**	0.076 J	0.101 J	0.09 U	0.09 U	0.045 U	0.096 J	0.044 U	0.043 U	0.30 J
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	4,000	0.23 U	0.23 U	0.23 U	0.23 U	**0.64 J**	0.24 U	0.23 U	0.23 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.12 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	**<2.0**	0.058 U	**<1.9**	0.24 U	**<2.0**	0.21 U	0.085 J	0.058 U	0.054 U	0.059 U	0.121 U	0.121 U	0.06 U	0.055 U	0.059 U	0.058 U	0.23 U
Perfluorooctanoic acid (PFOA)	0.72	300	4,000	**0.75 J**	**2.6**	**0.75 J**	0.26 U	**0.78 J**	**1.9**	**0.97 J**	**0.90 J**	0.25 U	0.25 U	0.37 J	0.30 J	**1.9**	0.228 J	0.25 U	0.25 U	0.34 J	0.25 U	0.25 U	0.25 U	**<2.0**	0.67 J	**<1.9**	0.68 J	**<2.0**	0.14 U	0.088 J	**0.989**	0.111 J	0.129 J	0.196 J	0.147 J	0.042 U	0.069 J	0.089 J	0.046 J	0.26 U
Perfluorononanoic acid (PFNA)	0.32	300	4,000	**2.5**	**5.7**	**1.4**	0.20 J	**0.91 J**	**3.1**	**2.9**	0.17 U	0.22 U	0.22 U	**0.51 J**	0.22 U	**0.87 J**	0.148 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	**<2.0**	**1.2**	**<1.9**	**0.54 J**	**<2.0**	0.15 U	0.119 J	**0.774 J**	0.281 J	0.246 J	0.15 U	0.15 U	0.075 U	0.11 J	0.073 U	0.072 U	0.17 U
Perfluorooctane sulfonate (PFOS)	2	300	4,000	**4.5**	**2.7**	1.1	0.29 J	**4.4**	1.1	1.0	1.1	0.26 U	0.26 U	0.29 J	0.26 U	0.26 U	0.257 U	0.26 U	0.38 J	0.26 U	0.85 J	0.26 U	0.26 U	0.26 U	<2.0	1.3	<1.9	0.32 J	<2.0	0.29 J	**2.02**	0.573 J	1.15	0.611 J	0.259 U	0.26 U	0.276 J	0.559 J	0.0127 U	0.0124 U	0.40 J
Perfluorodecanoic Acid (PFDA)	0.3	300	4,000	**4.4**	**1.2**	**0.62 J**	0.13 U	**1.6**	0.28 U	**0.85 J**	0.13 U	0.28 U	0.28 U	**0.42 J**	0.28 U	**1.4**	0.133 U	0.28 U	0.28 U	0.28 U	0.28 U	**0.33 J**	0.28 U	0.28 U	**<2.0**	**0.34 J**	**<1.9**	**0.95 J**	**<2.0**	0.15 U	0.074 J	0.147 J	0.146 J	0.066 U	0.134 U	0.134 U	0.067 U	0.119 J	0.065 U	0.064 U	**0.63 J**
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	NA	NA	0.93 J	0.74 J	1	0.23 U	0.61 J	4.2	0.65 J	2.2	0.26 U	0.26 U	0.26 U	0.26 U	18	0.355 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	<2.0	0.173 U	<1.9	0.25 U	<2.0	0.22 U	0.17 U	0.172 U	0.161 U	0.175 U	0.358 U	0.359 U	0.179 U	0.164 U	0.221 J	0.172 U	0.39 J
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																																							
Total PFAS	NA	NA	NA	120.06	41.75	46.85	1.16	23.72	11.03	11.9	95.43	0	0	6.2	1.14	161.07	0.613	1.5	1.35	0.48	1.92	1.1	0.43	0	0.0	5.2	0	13.15	0.0	0.45	3.131	11.267	2.652	1.409	0.316	0.147	0.571	1.412	0.411	0.09	11.14
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	NA	12.97	14	4.53	0.49	8.93	6.42	6.47	2.6	0	0	1.97	0.3	5.27	0.228	0	0.38	0	1.19	0.33	0	0	0	3.916	0	3	0	0.29	2.453	3.553	1.764	1.087	0.196	0.147	0.276	0.953	0.089	0.046	1.33

Sample Location				Deployment Area																																				
Sample ID	Method 1 Standard		UCL	DL2 (0-1')	DL2 2'	DL2 4'	DL3 (0-1')	DL3 2'	DL3 4'	DL4 (0-1')	DL4 2'	DL4 4'	DL5 (0-1')	DL5 2'	DL5 4'	DL6 (0-1')	DL7 (0-1')	DL8 (2')	DL8 (4')	DL9 (0-1')	DL10 (0-1')	DL11 (0-1')	DL11 (4-6')	DL11 (10-12')	DL11 (14-16')	DL12 (0-1')	DL13 (0-1')	DL14 (0-1')	DL14 (4-6')	DL14 (10-12')	DL14 (14-16')	DL15 (0-1)	DL16 (0-1)	DL17 (0-1)	DL18 (0-1)	DL19 (0-1)	DL20 (0-1)	DL21 (0-1)	DL22 (2-4)	DL22 (6-8)
Sample Date	S-1/GW-1	S-1/GW-3		6/20/2017	9/26/2017	9/26/2017	6/20/2017	9/26/2017	9/26/2017	6/20/2017	9/26/2017	9/26/2017	6/20/2017	9/26/2017	9/26/2017	6/20/2017	6/20/2017	6/20/2017	9/26/2017	6/20/2017	6/20/2017	9/26/2017	8/20/2019	10/4/2018	10/4/2018	10/4/2018	9/26/2017	9/26/2017	9/26/2017	10/4/2018	10/4/2018	10/4/2018	9/30/2020	9/30/2020	9/25/2020	9/25/2020	9/25/2020	9/25/2020	9/25/2020	9/25/2020	9/25/2020
Perfluoroheptanoic acid (PFHpA)	0.5	300	4,000	**1.9**	**1.2**	0.48 J	**0.84 J**	0.17 U	0.17 U	0.31 J	0.17 U	0.17 U	**2.5**	0.40 J	0.50 J	**5.0**	**2.5 J**	**2.9 J**	**4.7 J**	**0.66 J**	**1.3**	**2.1**	**1.8**	**1.3**	0.31 J	0.23 J	**1.2**	**1.6**	**4.9**	0.36 J	0.19 U	**1.4**	0.175 U	0.138 J	0.167 U	0.319 J	0.145 U	0.157 U	0.158 U	0.109 J	0.481 J
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	4,000	**1.8**	**1.3**	**0.59 J**	**0.34 J**	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	**0.49 J**	**0.49 J**	0.23 U	0.23 U	**2.3 U**	**2.3 U**	**2.3 U**	**0.35 J**	**0.94 J**	**0.82 J**	**<0.9**	0.24 U	0.24 U	0.24 U	0.23 U	0.23 U	**0.71 J**	0.24 U	0.24 U	**0.74 J**	0.235 U	0.057 U	0.224 U	0.159 J	0.194 U	0.21 U	0.212 U	0.057 U	0.07 J
Perfluorooctanoic acid (PFOA)	0.72	300	4,000	**1.6**	**4.1**	**0.74 J**	**0.80 J**	0.26 U	0.26 U	**0.83 J**	0.26 U	0.26 U	**3.7**	**1.6**	0.26 U	0.26 U	**4.2 J**	**25**	**22**	0.68 J	**1.7**	**4.7**	**5.2**	**2.9**	**1.9**	0.50 J	**4.6**	**2.4**	**23**	0.58 J	0.32 J	**2.9**	0.334 J	0.223 J	0.166 J	**0.979 J**	0.135 U	0.146 U	0.159 J	0.447 J	**1.32**
Perfluorononanoic acid (PFNA)	0.32	300	4,000	**0.81 J**	**2.5**	0.17 U	**0.55 J**	0.17 U	0.17 U	**2.7**	0.17 U	**3.7**	0.19 J	0.17 U	0.17 U	0.19 J	**9.6 J**	**46**	**1.7 U**	0.22 J	0.17 U	**16**	**2.4**	**2.5**	0.22 U	0.22 U	**7.3**	**1.5**	**10**	0.22 U	0.22 U	**10**	0.292 U	0.285 J	0.277 U	0.296 J	0.241 U	0.261 U	0.263 U	**5.46**	**2.66**
Perfluorooctane sulfonate (PFOS)	2	300	4,000	**12**	1.5	0.21 U	0.51 J	0.21 U	0.21 U	2.0	0.21 U	0.50 J	0.21 U	0.21 U	0.21 U	0.21 U	**3.9 J**	**14**	**2.1 U**	0.38 J	0.26 J	**29**	1.5	0.26 U	0.26 U	0.26 U	**23**	0.66 J	**7.4**	**9.6**	0.28 U	0.28 U	0.28 U	0.26 U	0.181 J	0.248 U	0.167 J	0.215 U	0.233 U	0.235 U	**0.834 J**	**0.383 J**
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	NA	NA	0.23 U	0.23 U	0.57 J	3.1	1.5	1	0.24 J	0.23 U	1.7	0.23 U	0.23 U	0.23 U	2	290	1600	900	0.23 U	0.23 U	**1.8**	**8.7**	0.28 U	0.28 U	0.28 U	**0.66 J**	**7.4**	**9.6**	0.28 U	0.28 U	0.28 U	0.26 U	0.181 J	0.248 U	0.167 J	0.215 U	0.233 U	0.235 U	**0.834 J**	**0.383 J**
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																																							
Total PFAS	NA	NA		24.41	12.17	2.38	84.86	9.56	13.81	9.6	0.88	5.9	11.03	2.49	0.5	18.59	404.4	1727.2	949.6	6.38	9.1	85.22	91.5	11.07	6.82	7.63	108.56	521.26	598.24	50.11	21.22	116.64	4.523	2.269	0.628	4.84	0	0	0.68	66.813	41.988
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	NA	18.11	10.6	1.81	4.44	0	0	7.14	0	4.2	6.88	2.49	0.5	5.19	20.2	87.9	26.7	2.29	4.2	54.42	19.6	6.7	2.21	0.73	36.76	13.56	55.81	0.94	0.32	17.34	0.334	1.402	0.166	2.97	0	0	0.159	27.15	13.764

Sample Location				Deployment Area																		
Sample ID	Method 1 Standard		UCL	DL22 (18-20)	DL23 (0-1)	D1 (0-1')	D2 (0-1')	D3 (0-1')	D4 (0-1')	D5 (0-1')	D6 (0-1')	D7 (0-1')	D8 (0-1')	D9 (0-1')	D10 (0-1')	D11 (0-1')	D12 (0-1')	HW-F (10-12')	HW-F (14-16')	HW-3 (0-1')	MCI Drill (0-1)	Annual Deployment (0-1)
Sample Date	S-1/GW-1	S-1/GW-3		9/25/2020	9/29/2020	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	8/14/2018	10/4/2018	10/4/2018	10/9/2018	12/9/2016	12/9/2016
Perfluoroheptanoic acid (PFHpA)	0.5	300	4,000	0.073 J	0.24 J	0.19 U	0.21 J	0.19 U	**0.95 J**	0.22 J	0.25 J	**7.8**	**1.0**	**2.7**	0.19 U	0.19 U	0.19 U	0.32 J	**1.3**	0.19 U	**8.4**	**20**
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	4,000	0.059 U	0.134 J	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	**0.31 J**	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	**0.5 J**	**4 U**
Perfluorooctanoic acid (PFOA)	0.72	300	4,000	0.176 J	0.471 J	0.25 U	0.33 J	0.25 U	**1.1**	0.25 U	0.28 J	**14**	**2.2**	**3**	0.25 U	0.25 U	0.25 U	0.25 U	**1.4**	0.25 U	**23**	**100**
Perfluorononanoic acid (PFNA)	0.32	300	4,000	**0.476 J**	0.176 J	0.22 U	**0.67 J**	0.22 U	**0.98 J**	0.22 U	0.22 U	**10**	**0.59 J**	**0.83 J**	0.22 U	0.22 U	0.22 U	0.32 J	0.22 U	0.22 U	**14**	**31**
Perfluorooctane sulfonate (PFOS)	2	300	4,000	1.18	0.725 J	0.26 U	0.66 J	0.38 J	**2.9**	0.26 U	0.26 U	**3.4**	**2.1**	0.67 J	0.54 J	0.91 J	0.44 J	0.26 U	0.26 U	0.26 U	**24**	1.9 J
Perfluorodecanoic Acid (PFDA)	0.3	300	4,000	0.065 U	0.266 J	0.28 U	0.28 U	0.28 U	**0.40 J**	0.28 U	**0.66 J**	**8.6**	**1.3**	**1.6**	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	**20**	**69**
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	NA	NA	2.67	0.181 U	0.26 U	0.26 U	0.26 U	0.26 U	0.78 J	1.2	12	0.26 U	6.6	0.26 U	0.26 U	0.26 U	24	140	0.26 U	270	4300
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																						
Total PFAS	NA	NA	NA	11.352	4.053	0.74	1.87	0.94	11.42	3.01	9.06	151.24	24.61	43.41	0.83	1.62	1.47	25.27	146.5	0	1,524	5,972.9
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	NA	1.905	2.012	0	1.87	0.38	6.33	0.22	1.19	43.8	7.5	8.8	0.54	0.91	0.76	0.32	2.7	0	89.9	221.9

Sample Location				1991 Drill Location						Old ARFF/SRE Building
Sample ID	Method 1 Standard		UCL	1991A (0-1')	1991B (0-1')	1991C (0-1')	1991D (0-1')	1991A-B (3-4')	1991C-D (2-3')	HW-X(m) [7-9]
Sample Date	S-1/GW-1	S-1/GW-3		8/14/2018	8/14/2018	8/14/2018	8/14/2018	12/14/2018	12/14/2018	9/7/2021
Perfluoroheptanoic acid (PFHpA)	0.5	300	4,000	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.043 U
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	4,000	0.24 U	**0.66 J**	0.24 U	0.24 U	0.24 U	0.24 U	0.058 U
Perfluorooctanoic acid (PFOA)	0.72	300	4,000	0.25 U	0.26 J	0.25 U	0.25 U	0.25 U	0.25 U	0.04 U
Perfluorononanoic acid (PFNA)	0.32	300	4,000	0.22 U	0.22 U	0.22 U	0.30 J	0.22 U	0.22 U	0.072 U
Perfluorooctane sulfonate (PFOS)	2	300	4,000	0.49 J	1.1	0.55 J	0.36 J	0.30 J	0.42 J	0.124 U
Perfluorodecanoic Acid (PFDA)	0.3	300	4,000	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.064 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	NA	NA	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.171 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six										
Total PFAS	NA	NA	NA	0.49	3.18	0.55	0.66	0.3	0.42	0.139
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	NA	0.49	2.02	0.55	0.66	0.3	0.42	0.124 U

Notes:
< = Not detected by the laboratory above the reporting limit. Reporting limit shown.
J = Estimated concentration between the method detection limit and reporting limit.
Results in ug/kg, micrograms per kilogram.
U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.
Bold results above the Method 1 S-1/GW-1 standard.
Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).
Sum of six includes estimated values and does not include non-detects (U or <).
UCL = Upper Concentration Limit

Table 3. Groundwater Results for PFAS Compounds ug/L

Sample Location		North Ramp Area													Lewis Pond Area	Airport Road/Iyannough Road Area									
Sample ID		HW-1	HW-1	HW-1	HW-4M	HW-4M	HW-5	HW-5	HW-5	HW-5	HW-23	HW-23	HW-19D	HW-19D	HW-X(s)	HW-X(m)	HW-401S	HW-A(S)	HW-B(S)	HW-B(S)	HW-B(D)	HW-C	HW-M	HW-N	HW-O
Sample Date	UCL	7/1/2016	6/20/2017	11/1/2018	4/5/2017	3/25/2022	7/1/2016	4/7/2017	11/1/2018	3/25/2022	6/20/2017	11/1/2018	6/20/2017	11/7/2018	9/10/2021	9/10/2021	4/7/2017	4/7/2017	4/7/2017	10/26/2018	10/26/2018	4/7/2017	6/24/2019	6/24/2019	7/2/2019
TOC Elevation		51.51	51.51	51.51	54.02	54.02	54.98	54.98	54.98	54.98	50.65	50.65	49.10	49.10	NA	NA	41.58	55.34	51.84	51.84	51.95	69.25	53.69	49.49	43.46
Depth to Groundwater		21.63	25.00	21.83	26.20	25.00	24.94	26.75	25.27	25.31	22.70	24.01	21.29	22.19	24.74	25.21	17.95	24.62	22.26	21.59	21.66	38.50	20.32	15.48	3.62
Groundwater Elevation		29.88	26.51	29.68	27.82	29.02	30.04	28.23	29.71	29.67	27.95	26.64	27.81	26.91	NA	NA	23.63	30.72	29.58	30.25	30.29	30.75	33.37	34.01	39.84
Total Well Depth		30.84	30.84	30.84	32.32	32.32	27.80	27.80	27.80	27.80	28.11	28.11	41.30	41.30	29.24	36.82	23.60	32.00	30.23	30.23	57.20	42.15	26.92	22.33	14.10
Perfluoroheptanoic acid (PFHpA)	100,000	0.01	0.0042 J	0.013 J	0.007 J	0.003	0.0041	0.0084 J	0.0074 U	0.0048	0.0045J	0.0098 J	0.0052 J	0.0080 J	0.0061	0.0034	0.0043 J	0.0048 J	0.049	0.012 J	0.0074 U	0.0033 U	0.007	0.0034	<0.002
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.018	0.065	0.018 J	0.02	0.011	0.011	0.018 J	0.0056 U	0.013	0.021	0.023	0.046	0.045	0.047	0.0021	0.011 J	0.0079 J	0.044	0.047	0.0056 U	0.0034 U	0.016	0.033	0.0043
Perfluorononanoic acid (PFNA)	100,000	<0.002	0.0057 J	0.0087 U	0.0046 U	0.0018 U	<0.002	0.0046 U	0.0088 J	0.0018 U	0.0038 U	0.0087 U	0.0065 J	0.0087 U	0.00049 J	0.002	0.0046 U	0.0046 U	0.0046 U	0.0087 U	0.0087 U	0.0046 U	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	100,000	0.033	0.022	0.031	0.011 J	0.013	0.031	0.020 J	0.011 J	0.023	0.0046 U	0.011 J	0.017 J	0.014 J	0.013	0.0062	0.0046 U	0.0026 U	0.0094 J	0.020 J	0.012 J	0.0026 U	0.027	0.0088	0.0039
Perfluorooctane sulfonate (PFOS)	5,000	0.017	0.24	0.028	0.043	0.025	0.12	0.052	0.12	0.048	0.0079 J	0.015 J	0.061	0.069	0.068	0.034	0.012 J	0.0026 U	0.026	0.019 J	0.010 J	0.0026 U	0.0074	0.004	0.017
Perfluorodecanoic Acid (PFDA)	100,000	NA	0.0040 U	0.0061 U	0.0040 U	0.0018 U	NA	0.0040 U	0.0061 U	0.0018 U	0.0040 U	0.0061 U	0.0040 U	0.0061 U	0.00050 U	0.0042	0.0040 U	0.0040 U	0.0040 U	0.0061 U	0.0061 U	0.0040 U	<0.002	<0.002	0.0021
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	NA	0.0032 U	0.0066 U	0.0038 J	0.0018 U	NA	0.0037 J	0.0066 U	0.0018 U	0.0032 U	0.0066 U	0.0032 U	0.0066 U	0.002 J	0.00035 U	0.004 J	0.0032 U	0.0032 U	0.0066 U	0.0066 U	0.0034 J	<0.002	<0.002	0.002 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																									
Total PFAS	NA	0.078	0.4247	0.15	0.1162	0.0679	0.1661	3.0021	0.1507	0.1045	0.0745	0.0858	0.1758	0.16	0.18221	0.10025	0.0313	0.0779	0.4561	0.186	0.0465	0.0034	0.0927	0.0727	0.0585
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.078**	**0.3369**	**0.09**	**0.081**	**0.052**	**0.1661**	**0.0984**	**0.1398**	**0.0888**	**0.0334**	**0.0588**	**0.1357**	**0.136**	**0.13459**	**0.0519**	**0.0273**	0.0127	**0.1284**	**0.098**	**0.022**	<0.0046	**0.0574**	**0.0492**	**0.0273**

Sample Location		Deployment Area																														
Sample ID		HW-I (s)	HW-I (s)	HW-I (s)	HW-I (s)	HW-I (s)	HW-I (s)	HW-I (s)	HW-I (s)	HW-I (s)	HW-I (s)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (m)	HW-I (d)	HW-I (d)	HW-I (d)	HW-I (d)	HW-I (d)	HW-I (d)	HW-I (d)	HW-I (d)	HW-J	HW-J	HW-J	HW-J
Sample Date	UCL	11/7/2018	5/8/2020	3/17/2021	9/8/2021	3/18/2022	8/2/2022	10/31/2022	2/2/2023	6/7/2023	12/5/2023	6/24/2019	5/8/2020	3/17/2021	9/8/2021	3/18/2022	8/2/2022	10/31/2022	6/7/2023	12/5/2023	6/24/2019	5/8/2020	3/17/2021	9/11/2021	3/18/2022	8/2/2022	10/31/2022	6/7/2023	12/5/2023	11/7/2018	3/17/2021	9/10/2021	3/16/2022
TOC Elevation		36.08	36.08	36.08	36.08	36.08	36.08	36.08	36.08	36.08	36.08	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.27	36.02	36.02	36.02	36.02	36.02	36.02	36.02	36.02	36.02	37.10	37.10	37.10	37.10
Depth to Groundwater		18.35	15.39	18.42	19.94	17.72	19.81	20.44	17.55	19.19	24.00	16.33	15.61	18.66	20.17	18.07	20.03	20.70	18.98	20.19	16.20	15.49	18.52	20.04	17.95	19.90	20.55	18.85	20.07	19.18	19.34	20.60	18.75
Groundwater Elevation		17.73	20.69	17.66	16.14	18.36	16.27	15.64	18.53	16.89	12.08	19.94	20.66	17.61	16.10	18.20	16.24	15.57	17.29	16.08	19.82	20.53	17.50	15.98	18.07	16.12	15.47	17.17	15.95	17.92	17.76	16.50	18.35
Total Well Depth		25.10	25.10	25.10	25.10	25.15	25.18	25.14	25.15	25.60	25.60	34.80	34.80	34.80	34.80	34.80	34.80	34.80	34.79	34.80	41.67	41.67	41.67	41.67	41.67	41.70	41.70	41.70	41.70	24.30	24.30	24.30	24.28
Perfluoroheptanoic acid (PFHpA)	100,000	0.2	0.54	0.032	0.097	0.098	0.2	0.065	0.021	0.106	0.1	0.0032	0.0012	0.00086 J	0.0014 J	0.0024	0.0017 U	0.00067 J	0.00116 J	0.0018 J	0.0053	0.0046	0.0065	0.0083	0.0079	0.012	0.0093	0.0108	0.023	0.025	0.044	0.02	0.13
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.18	0.22	0.021	0.036	0.06	0.11	0.026	0.011	0.0692	0.04	0.019	0.0091	0.0052	0.0078	0.0052	0.0032	0.0042	0.00592	0.0072	0.057	0.018	0.031	0.05	0.039	0.063	0.045	0.028	0.023	0.0056 U	0.088	0.01	0.15
Perfluorononanoic acid (PFNA)	100,000	0.16	0.082	0.065	0.033	0.21	0.12	0.04	0.028	0.235	0.15	<0.002	0.00078	0.00048 U	0.00046 J	0.00061 J	0.0017 U	0.00061 U	0.000518 J	0.00088 U	<0.002	0.00063 U	0.00075 J	0.00084 J	0.00077 J	0.0018 U	0.0011 J	0.00117 J	0.0014 J	0.028	0.035 J	0.015	0.062
Perfluorooctanoic acid (PFOA)	100,000	0.26	0.29	0.05	0.063	0.11	0.17	0.067	0.016	0.172	0.14	0.0061	0.0018	0.0014 J	0.0016 J	0.0016 J	0.0017 U	0.00076 J	0.000977 J	0.0013 U	0.0047	0.0028	0.0043	0.0053	0.0074	0.013 U	0.0096	0.0101	0.019	0.026	0.061	0.0091	0.13
Perfluorooctane sulfonate (PFOS)	5,000	0.066	0.04	0.028	0.02	0.52	0.43	0.036	0.024	0.708	0.14	0.014	0.014	0.013	0.016	0.011	0.005	0.0043	0.00676	0.0081	0.012	0.02	0.038	0.039	0.047	0.083	0.063	0.0719	0.094	0.13	0.25	0.08	0.15
Perfluorodecanoic Acid (PFDA)	100,000	0.012 U	0.00062 U	0.0038 U	0.00047 U	0.00043 U	0.0018 U	0.00065 U	0.0018 U	0.02 U	0.00072 U	<0.002	0.00062 U	0.00038 U	0.00050 U	0.00043 U	0.0017 U	0.00065 U	0.00174 U	0.00079 U	<0.002	0.00062 U	0.00038 U	0.00048 U	0.00043 U	0.0018 U	0.00065 U	0.000296 JF	0.00075 U	0.0061 U	0.0076 U	0.00050 U	0.00044 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	11	13	1.7	2.1	1.3	4.6	0.0013 U	0.48	1.53	0.001 U	<0.002	0.00039 U	0.0011 U	0.00037 U	0.00032 U	0.0017 U	0.0013 U	0.00174 U	0.0012 U	<0.002	0.0016	0.0011 U	0.00054	0.00086	0.0018 U	0.0013 U	0.00174 U	0.0011 U	0.68	0.44	0.13	1.6
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																																	
Total PFAS	NA	13.346	15.5383	2.082	2.73304	2.66512	6.1201	0.5101	0.69229	3.12648	0.9408	0.0718	0.03308	0.02516	0.03254	0.02985	0.0082	0.00993	0.018057	0.0223	0.1367	0.08985	0.15585	0.16687	0.15181	0.23	0.1844	0.196726	0.4114	1.074	1.217	0.511	2.826
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.866**	**1.172**	**0.196**	**0.249**	**0.998**	**1.03**	**0.234**	**0.1**	**1.2902**	**0.57**	**0.0423**	**0.02688**	**0.02046**	**0.02726**	**0.02081**	0.0082	0.00993	0.015335	**0.0171**	**0.079**	**0.0454**	**0.08055**	**0.10344**	**0.10207**	**0.158**	**0.128**	**0.122266**	**0.1604**	**0.209**	**0.478**	**0.1341**	**0.622**

Sample Location		Yarmouth Road Area													Solar Field Area								Steamship Parking Lot Area			
Sample ID		HW-T (s)	HW-T (s)	HW-T (m)	HW-T (m)	RB-1 (s)	RB-1 (s)	RB-1 (s)	RB-1 (m)	RB-1 (m)	RB-1 (m)	RB-1 (m)	HW-D (m)	HW-D (m)	HW-D (d)	HW-D (d)	HW-D (dd)	HW-G(S)	HW-G(M)	HW-G(D)	HW-2	HW-2	HW-2	HW-2
Sample Date	UCL	10/1/2020	5/18/2022	10/1/2020	5/18/2022	11/5/2020	3/18/2021	9/5/2021	3/31/2022	11/5/2020	3/18/2021	9/5/2021	3/31/2022	4/7/2017	5/13/2020	6/24/2019	5/13/2020	6/24/2019	5/13/2020	12/3/2018	12/3/2018	12/3/2018	7/1/2016	5/5/2020	9/1/2021	3/25/2022
TOC Elevation		28.97	28.97	29.11	29.11	NA	NA	NA	NA	NA	NA	NA	NA	45.20	45.20	45.08	45.08	45.05	45.05	44.99	45.11	44.93	40.41	40.41	40.41	40.41
Depth to Groundwater		13.41	12.07	13.58	12.24	17.87	16.91	18.64	16.65	17.79	16.85	18.57	16.59	18.83	18.34	18.99	18.23	20.60	19.97	20.69	20.75	20.71	27.48	25.33	30.20	27.72
Groundwater Elevation		15.56	16.90	15.53	16.87	NA	NA	NA	NA	NA	NA	NA	NA	26.37	26.86	26.09	26.85	24.45	25.08	24.30	24.36	24.22	12.93	15.08	10.21	12.69
Total Well Depth		18.54	18.60	28.96	28.96	27.80	27.80	27.80	27.81	49.85	49.85	48.85	48.82	30.32	30.32	44.94	44.94	65.05	65.05	28.45	38.25	48.28	32.80	32.80	32.80	32.35
Perfluoroheptanoic acid (PFHpA)	100,000	0.0039	0.0073	0.022	0.02	0.0042	0.0054	0.0077	0.0051	0.011	0.013 J	0.0073	0.0073	0.0033 U	0.00053 U	0.021	0.017	<0.002	0.00053 U	0.0074 U	0.0074 U	0.0074 U	0.0071	0.035	0.046	0.011
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.17	0.029	0.019	0.046	0.0084	0.03	0.0051	0.022	0.01	0.017 J	0.0099	0.016	0.0089 J	0.00077 U	0.062	0.039	0.0092	0.008	0.0056 U	0.012 J	0.0056 U	0.0035	0.0066	0.0056 J	0.009
Perfluorononanoic acid (PFNA)	100,000	0.00074	0.0013	0.0032	0.00031 U	0.0047	0.0025	0.0026	0.0029	0.0068	0.0072 J	0.0044	0.0062	0.0046 U	0.00063 U	0.015	0.019	0.0041	0.0029	0.0087 U	0.011 J	0.0087 U	<0.002	0.016	0.004 J	0.0052
Perfluorooctanoic acid (PFOA)	100,000	0.0067	0.01	0.011	0.0035	0.007	0.0087	0.0093	0.0092	0.013	0.013 J	0.012	0.01	0.0046 U	0.00071 U	0.0088	0.0076	<0.002	0.00071 U	0.0033 U	0.0033 U	0.0033 U	0.0063	0.039	0.012	0.01
Perfluorooctane sulfonate (PFOS)	5,000	0.21	0.035	0.025	0.0059	0.038	0.04	0.01	0.0045	0.049	0.075	0.055	0.054	0.022	0.0011	0.095	0.12	0.013	0.013	0.0060 U	0.036	0.0060 U	0.012	0.053	0.026	0.024
Perfluorodecanoic Acid (PFDA)	100,000	0.00062 U	0.00047	0.0014	0.00054	0.00062 U	0.00038 U	0.00045 U	0.0019 U	0.00075	0.0038 U	0.0033	0.0028	0.0040 U	0.00062 U	<0.002	0.00062 U	<0.002	0.00062 U	0.0061 U	0.0061 U	0.0061 U	NA	0.00062 U	0.0025 U	0.0018 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	0.00039 U	0.00032 U	0.00039 U	0.00033 U	0.00039 U	0.0011 U	0.00034 U	0.0019 U	0.038	0.055	0.013	0.02	0.0032 U	0.00039 U	0.0022	0.00039 U	0.002 U	0.00039 U	0.0066 U	0.0066 U	0.0066 U	NA	0.15	0.071	0.052
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																										
Total PFAS	NA	0.44114	0.1295	0.3254	0.33614	0.08008	0.1175	0.06755	0.0713	0.2015	0.2642	0.1561	0.1733	0.0309	0.0011	0.2768	0.24993	0.0263	0.02444	0.0087 U	0.059	0.0087 U	0.0289	0.42678	0.4136	0.1563
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.39134**	**0.08307**	**0.0816**	**0.07594**	**0.0623**	**0.0866**	**0.0347**	**0.0437**	**0.09055**	**0.1252**	**0.0919**	**0.0963**	**0.0309**	0.0011	**0.2018**	**0.2026**	**0.0263**	**0.0239**	0.0087 U	**0.059**	0.0087 U	**0.0289**	**0.1496**	**0.0936**	**0.0592**

Sample Location		Maher Well Area																														
Sample ID		ME-1*	MW-1*	ME-1*	ME-1*	ME-1*	ME-1*	ME-2**	ME-2**	ME-2**	ME-2**	ME-2**	ME-2**	ME-3***	ME-3***	ME-3***	ME-3***	ME-3***	ME-3***	OW-18S	OW-18S	OW-18S	OW-18M	OW-18M	OW-18M	OW-18D	OW-18D Duplicate	OW-18D	OW-18D	OW-18D
Sample Date	UCL	9/17/2020	7/29/2022	11/2/2022	2/2/2023	5/26/2023	12/6/2023	9/17/2020	7/29/2022	11/2/2022	2/2/2023	5/26/2023	12/6/2023	9/17/2020	7/29/2022	11/2/2022	2/2/2023	5/26/2023	12/6/2023	7/5/2016	12/7/2018	5/8/2020	7/5/2016	12/7/2018	5/8/2020	7/5/2016	7/5/2016	4/11/2017	12/7/2018	5/13/2020
TOC Elevation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39.03	39.03	39.03	39.30	39.30	39.30	38.84	38.84	38.84	38.84	38.84
Depth to Groundwater		3.60	NA	NA	NA	NA	NA	6.50	NA	NA	NA	NA	NA	6.00	NA	NA	NA	NA	NA	24.40	24.29	23.45	25.82	24.72	23.93	25.95	25.95	25.55	24.28	23.47
Groundwater Elevation		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.63	14.74	15.58	13.48	14.58	15.37	12.89	12.89	13.29	14.56	15.37
Total Well Depth		81.20	NA	NA	NA	NA	NA	54.20	NA	NA	NA	NA	NA	50.30	NA	NA	NA	NA	NA	31.23	31.23	31.23	74.44	74.44	74.44	123.36	123.36	123.36	123.36	123.36
Perfluoroheptanoic acid (PFHpA)	100,000	0.011	0.025	0.017	0.015	0.018	0.015	0.0055	0.016	0.036	0.027	0.017	0.017	0.0036	0.0065	0.0082	0.0087	0.0086	0.012	0.0071	0.0074 U	0.0039	0.0029	0.0074 U	0.0074	0.0071	0.0063	0.015J	0.014 J	0.012
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.03	0.058	0.04	0.027	0.029	0.038	0.04	0.035	0.071	0.065	0.044	0.046	0.018	0.029	0.032	0.032	0.034	0.038	0.0068	0.0056 U	0.0085	0.016	0.073	0.07	0.01	0.011	0.13	0.13	0.03
Perfluorononanoic acid (PFNA)	100,000	0.017	0.021	0.015	0.0098	0.011	0.012	0.003	0.0089	0.023	0.014	0.0067	0.011	0.004	0.0054	0.007	0.0063	0.0061	0.0087	<0.002	0.0087 U	0.0032	0.0076	0.0087 U	0.0027	0.0065	0.0058	0.0046 U	0.0087 U	0.0028
Perfluorooctanoic acid (PFOA)	100,000	0.016	0.029	0.021	0.015	0.018	0.019	0.0077	0.017	0.032	0.02	0.017	0.016	0.012	0.012	0.014	0.011	0.014	0.016	0.018	0.012 J	0.01	0.0058	0.0060 J	0.0096	0.0059	0.0059	0.025	0.019 J	0.0095
Perfluorooctane sulfonate (PFOS)	5,000	0.11	0.12	0.087	0.069	0.069	0.075	0.095	0.051	0.093	0.077	0.065	0.07	0.072	0.07	0.086	0.072	0.083	0.094	0.0083	0.028	0.016	0.044	0.24	0.18	0.018	0.019	0.22	0.32	0.041
Perfluorodecanoic Acid (PFDA)	100,000	0.00062 U	0.0017 U	0.001	0.0018 U	0.00083	0.00086 J	0.00062 U	0.0017 U	0.0014 J	0.00086 J	0.00079 U	0.00086 J	0.00062 U	0.0017 U	0.00064	0.0018 U	0.00074	0.00083 U	NA	0.0061 U	0.00062 U	NA	0.0061 U	0.00062 U	NA	NA	0.0040 U	0.0061 U	0.00062 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	0.034	0.046	0.026	0.026	0.043	0.022	0.00039 U	0.043	0.25	0.31	0.045	0.07	0.0071	0.0054	0.0035	0.004	0.0027	0.014	NA	0.0066 U	0.00039 U	NA	0.0066 U	0.00039 U	NA	NA	0.0032 U	0.0066 U	0.00039 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																														
Total PFAS	NA	0.2873	0.4769	0.3426	0.2712	0.31403	0.15986	0.2009	0.2702	0.73928	0.70216	0.3223	0.35446	0.14005	0.1796	0.221	0.2012	0.21741	0.27988	0.0402	0.0573	0.05953	0.0763	0.3891	0.4357	0.0475	NA	0.506	0.5504	0.1832
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.184**	**0.253**	**0.181**	**0.1358**	**0.14583**	**0.15986**	**0.1512**	**0.1279**	**0.2564**	**0.20386**	**0.1497**	**0.16086**	**0.1096**	**0.1229**	**0.1478**	**0.13**	**0.1464**	**0.1687**	**0.0402**	**0.04**	**0.0416**	**0.0763**	**0.319**	**0.2697**	**0.0475**	**0.048**	**0.39**	**0.483**	**0.0953**

Notes:

UCL = Upper Concentration Limit

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

J = Estimated concentration between the method detection limit and reporting limit.

Results in ug/L, micrograms per liter.

U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.

Bold results above Method 1 GW-1 standard (0.02 ug/L).

Sum of six includes estimated values and does not include non-detects (U or <).

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

NA = Not Applicable.

* = ME-1 is screened from 37 to 47 and 70 to 80 feet below grade.

** = ME-2 is screened from 44 to 54 feet below grade.

*** = ME-3 is screened from 40 to 50 feet below grade.

The Method 1 GW-3 Standard for the individual analytes in the Sum of Six ranges from 500 to 40,000 ug/l.

1. Well elevation increased due to soil cap.

Table 3. Groundwater Results for PFAS Compounds ug/L

Sample Location		Airport Road/Iyannough Road Area												ARFF Building Area								
Sample ID		HW-U(s)	HW-U(s)	HW-U(s)	HW-U(m)	HW-U(m)	HW-U(m)	HW-U(d)	HW-U(d)	HW-U(d)	HW-V(m)	HW-L (s)	HW-L (m)	HW-L (d)	HW-L (d)	HW-P (s)	HW-P (s)	HW-P (s)	HW-P (s)	HW-P (s)	HW-P (s)	HW-P (s)
Sample Date	UCL	4/19/2021	9/5/2021	3/15/2022	4/19/2021	9/5/2021	3/15/2022	10/2/2020	9/5/2021	3/15/2022	10/2/2020	10/7/2020	10/7/2020	6/19/2019	10/7/2020	10/1/2020	3/18/2021	9/8/2021	3/18/2022	11/2/2022	2/2/2023	6/8/2023	12/5/2023
TOC Elevation		NA	NA	NA	NA	NA	NA	48.80	48.80	48.80	53.83	39.07	38.98	39.15	39.15	40.51	40.51	40.51	40.51	40.51	40.51	40.51	40.51
Depth to Groundwater		23.59	24.53	22.89	23.50	24.49	22.80	24.66	25.24	23.52	22.90	21.96	21.88	19.40	22.22	22.69	22.09	23.54	21.61	23.96	21.42	22.23	23.47
Groundwater Elevation		NA	NA	NA	NA	NA	NA	24.14	23.56	25.28	30.93	17.11	17.10	19.75	16.93	17.82	18.42	16.97	18.90	16.55	19.09	18.28	17.04
Total Well Depth		28.83	28.83	29.15	38.93	38.93	39.65	62.30	62.30	63.65	36.15	27.33	37.33	70.55	70.55	27.60	27.60	27.60	27.61	27.61	27.62	27.60	27.60
Perfluoroheptanoic acid (PFHpA)	100,000	0.002 J	0.004	0.0027	0.0018 J	0.0049	0.004	0.01	0.01	0.01	0.0033	0.00053 U	0.0064	0.0078	0.0065	0.026	0.0067	0.004	0.01	0.0044	0.012	0.00698	0.0076
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.01	0.0034	0.0039	0.0043	0.011	0.0098	0.018	0.022	0.017	0.0032	0.0013	0.023	0.033	0.015	0.0018	0.00074 J	0.00056 J	0.0012 J	0.00054 U	0.0022	0.000798 JF	0.0018
Perfluorononanoic acid (PFNA)	100,000	0.0013 J	0.0017 J	0.0013 J	0.00083 J	0.0011 J	0.0021	0.0016	0.005	0.0025	0.0017	0.00063 U	0.0025	0.0033	0.0022	0.0061	0.002	0.0013 J	0.0039	0.0016 J	0.015	0.0151	0.013
Perfluorooctanoic acid (PFOA)	100,000	0.0075	0.0047	0.0052	0.0055	0.0094	0.018	0.01	0.013	0.013	0.0063	0.00071 U	0.01	0.025	0.018	0.0084	0.0042	0.0017 J	0.012	0.0037	0.014	0.0145	0.0034
Perfluorooctane sulfonate (PFOS)	5,000	0.06	0.029	0.012	0.0093	0.027	0.029	0.023	0.051	0.043	0.0059	0.0014	0.07	0.049	0.039	0.00097	0.00049 J	0.00054 U	0.00098 J	0.00048 J	0.0037	0.00138 JF	0.0024
Perfluorodecanoic Acid (PFDA)	100,000	0.00064 J	0.0011 J	0.0006 J	0.00038 U	0.001 U	0.00055 J	0.00062 U	0.0025 U	0.00047 J	0.00062 U	0.00062 U	0.00062 U	<0.002	0.0019	0.00085	0.0004 J	0.00048 U	0.00043 U	0.00066 U	0.0018 U	0.000464 J	0.00083 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	0.0011 U	0.00034 U	0.00032 U	0.0011 U	0.00075	0.00033 U	0.0012	0.04	0.00032 U	0.00039 U	0.00039 U	0.022	0.0021	0.00078	0.011	0.0034	0.0014	0.0083	0.0016 J	0.019	0.00441	0.0016 J
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																							
Total PFAS	NA	0.09704	0.06596	0.04424	0.03622	0.0839	0.10395	0.0889	0.1775	0.12378	0.0543	0.0027	0.18375	0.1823	0.12348	0.2478	0.06294	0.05055	0.08508	0.03898	0.1232	0.100275	0.1088
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.08144**	**0.0439**	**0.0257**	**0.02173**	**0.0534**	**0.06345**	**0.0588**	**0.0987**	**0.08167**	**0.0204**	0.0027	**0.1119**	**0.1181**	**0.0826**	**0.04412**	0.01453	0.00756	**0.02808**	**0.01018**	**0.0469**	**0.039222**	**0.0282**

Sample Location		Deployment Area																				
Sample ID		HW-E	HW-E	HW-E	HW-E	HW-E[1]	HW-E[1]	HW-E[1]	HW-F	HW-F	HW-F	HW-F	HW-F	HW-F	HW-H	HW-H	HW-H	HW-H†	HW-R(s)	HW-R(s)	HW-R(s)	HW-R(s)	HW-R†
Sample Date	UCL	4/5/2017	11/7/2018	8/19/2019	5/5/2020	3/17/2021	9/8/2021	3/16/2022	4/5/2017	11/7/2018	5/5/2020	3/17/2021	9/8/2021	3/16/2022	11/7/2018	5/8/2020	5/18/2022	6/1/2023	10/1/2020	3/17/2021	9/8/2021	3/16/2022	6/1/2023
TOC Elevation		38.45	38.45	38.45	38.45	42.40	42.40	42.40	36.32	36.32	36.32	36.32	36.32	36.32	38.47	38.47	38.47	NA	35.72	35.72	35.72	35.72	NA
Depth to Groundwater		19.05	19.38	17.82	16.16	23.35	25.02	22.67	19.60	20.08	16.82	20.01	21.72	19.34	20.39	17.37	20.07	23.10	18.33	17.37	19.00	16.69	18.44
Groundwater Elevation		19.40	19.07	20.63	22.29	19.05	17.38	19.73	16.72	16.24	19.50	16.31	14.60	16.98	18.08	21.10	18.40	NA	17.39	18.35	16.72	19.03	NA
Total Well Depth		26.22	26.22	26.22	26.22	30.26	30.26	30.26	26.89	26.89	26.89	26.89	26.89	26.83	27.09	27.09	27.07	28.03	23.56	23.67	23.67	23.66	23.25
Perfluoroheptanoic acid (PFHpA)	100,000	0.15	0.0074 U	0.0053	0.044	0.014	0.0018 J	0.023	0.34	0.0074 U	0.23	0.39	0.0051	0.36	0.077	0.28	0.015	0.00076 U	0.021	0.005	0.021	0.03	0.0099
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.042	0.0056 U	0.0021	0.011	0.0015 J	0.00088 J	0.0028	0.019J	0.0056 U	0.005	0.012 U	0.00037 U	0.0097	0.0056 U	0.0031	0.0021	0.00099 J	0.02	0.01	0.0046	0.0019	0.0012 J
Perfluorononanoic acid (PFNA)	100,000	0.0087 J	0.0087 U	<0.002	0.0052	0.00048 U	0.00037 U	0.0023	0.0046 U	0.0087 U	0.00081	0.0097 U	0.00037 U	0.0025	0.0087 U	0.00063 U	0.0003 U	0.00083 U	0.0031	0.001 J	0.00034 U	0.00031 U	0.00081 U
Perfluorooctanoic acid (PFOA)	100,000	0.053	0.0033 U	0.0047	0.027	0.00095 J	0.00094 J	0.029 J	0.075	0.0033 U	0.02	0.052	0.00074 U	0.052	0.0050 J	0.002	0.0006 U	0.0012 U	0.014	0.004	0.004	0.0014 J	0.0012 U
Perfluorooctane sulfonate (PFOS)	5,000	0.047	0.0060 U	<0.002	0.0037	0.00082 J	0.00064 U	0.0013 J	0.0026 U	0.0060 U	0.00086	0.0076 U	0.00065 U	0.0037	0.0060 U	0.00068 U	0.00053 U	0.00077 U	0.016	0.0023	0.0053	0.001 J	0.00074 U
Perfluorodecanoic Acid (PFDA)	100,000	0.0040 U	0.0061 U	<0.002	0.00062 U	0.00038 U	0.00052 U	0.00043 U	0.0040 U	0.0061 U	0.00062 U	0.0076 U	0.00053 U	0.00043 U	0.0061 U	0.00062 U	0.00043 U	0.00075 U	0.00062 U	0.00038 U	0.00049 U	0.00044 U	0.00073 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	2	0.0066 U	0.069	0.86	0.0035	0.00039 U	0.83	5.7	0.0066 U	1.5	4.8	0.0049	8.2	1.5	0.13	0.00032 U	0.0011 U	0.037	0.0048	0.003	0.0053	0.0011 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																							
Total PFAS	NA	3.2257	0.0087 U	0.14	1.04526	0.04812	0.01342	0.9169	12.96	0.084	2.65637	8.422	0.159	12.18373	4.452	1.26666	0.165	0.021	0.2171	0.04878	0.2549	0.30126	0.0873
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.3007**	0.0087 U	0.0121	**0.0909**	0.01727	0.00362	**0.0584**	**0.434**	0.0087 U	**0.25667**	**0.442**	0.0051	**0.4279**	**0.082**	**0.2851**	0.0171	0.00099	**0.0741**	**0.0223**	**0.0349**	**0.0343**	**0.0111**

Sample Location		Steamship Parking Lot Area																		
Sample ID		HW-3	HW-3	HW-3	HW-3	HW-3	HW-3	HW-3	HW-3	HW-3	HW-300	HW-300	HW-300	HW-300	HW-301	HW-302	HW-302	HW-302	HW-302	HW-302
Sample Date	UCL	7/1/2016	4/5/2017	10/26/2018	5/5/2020	3/17/2021	9/1/2021	3/25/2022	10/31/2022	12/6/2023	7/1/2016	3/17/2021	9/2/2021	3/31/2022	7/1/2016	7/1/2016	12/3/2018	3/17/2021	9/1/2021	3/25/2022	12/6/2023
TOC Elevation		38.74	38.74	38.74	38.74	38.74	38.74	38.74	38.74	38.74	36.09	36.09	36.09	36.09	39.46	41.17	41.17	41.17	41.17	41.17	41.17
Depth to Groundwater		25.81	25.70	26.06	23.64	26.19	28.35	26.03	27.63	27.43	22.52	22.86	23.02	22.53	25.05	23.52	22.65	24.04	26.15	23.70	25.59
Groundwater Elevation		12.93	13.04	12.68	15.10	12.55	10.39	12.71	11.11	11.31	13.57	13.23	13.07	13.56	14.41	17.65	18.52	17.13	15.02	17.47	15.58
Total Well Depth		33.08	33.08	33.08	33.08	33.12	33.11	33.70	33.00	32.99	30.33	30.30	30.34	30.40	30.42	30.45	30.45	30.44	30.40	30.42	30.40
Perfluoroheptanoic acid (PFHpA)	100,000	0.016	0.1	0.10	0.1	0.084	0.035	0.02	0.054	0.018	0.0096	0.0028	0.0029	0.0019 U	0.002	0.019	0.015 J	0.0066	0.0062	0.0092	0.012
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.0043	0.020 J	0.012 J	0.0087	0.0064 J	0.0057 J	0.013	0.024	0.03	0.012	0.0099	0.00066 J	0.006	0.038	0.0063	0.016 J	0.0022	0.004	0.013	0.0084
Perfluorononanoic acid (PFNA)	100,000	0.0063	0.027	0.023	0.021	0.019 J	0.014 J	0.0039	0.0097	0.0092	<0.002	0.00099 J	0.0028	0.0019 U	<0.002	0.054	0.0097 J	0.0066	0.005	0.02	0.033
Perfluorooctanoic acid (PFOA)	100,000	0.0091	0.065	0.057	0.054	0.064	0.016 J	0.0069	0.022	0.015	0.0052	0.0044	0.0044	0.0033	0.0037	0.033	0.03	0.005	0.0065	0.017	0.011
Perfluorooctane sulfonate (PFOS)	5,000	0.084	0.15	0.053	0.1	0.056	0.044	0.024	0.028	0.044	0.017	0.015	0.017	0.012	0.011	0.014	0.031	0.0041	0.015	0.0095	0.021
Perfluorodecanoic Acid (PFDA)	100,000	NA	0.0040 U	0.0061 U	0.0014	0.0038 U	0.0052 U	0.0019 U	0.00069 U	0.00079 U	NA	0.00038 U	0.0006 J	0.0019 U	NA	NA	0.0061 U	0.00086 J	0.001 J	0.0019 U	0.0016
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	NA	0.47	0.12	0.13	0.47	0.2	0.14	0.0014 U	0.13	NA	0.0011 U	0.00034 U	0.0019 U	NA	NA	0.13	0.012	0.0062	0.072	0.026
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																					
Total PFAS	NA	0.1197	1.603	0.952	0.96981	1.1394	0.6867	0.4359	0.73178	0.4776	0.0438	0.05509	0.03812	0.0369	0.0547	0.1263	0.3427	0.08304	0.09793	0.2149	0.20946
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.1197**	**0.362**	**0.245**	**0.2851**	**0.2294**	**0.1147**	**0.0678**	**0.1377**	**0.1162**	**0.0438**	**0.03309**	**0.02836**	**0.0213**	**0.0547**	**0.1263**	**0.1017**	**0.02536**	**0.0377**	**0.0687**	**0.087**

Sample Location		Maher Well Area																			
Sample ID		OW-19(S)	OW-19(S)	OW-19(S)	OW-19(S)	OW-19(M)	OW-19(M)	OW-19(M)	OW-19(M)	OW-19D	OW-19D	OW-19D	OW-19D	OW-19D	HW-W(m)	HW-W(m)	HW-W(m)	HW-W(m)	HW-W(d)	HW-W(d)	HW-W(d)
Sample Date	UCL	11/6/2020	3/18/2021	9/2/2021	3/16/2022	11/6/2020	3/19/2021	9/3/2021	3/18/2022	4/11/2017	5/13/2020	3/19/2021	9/11/2021	3/18/2022	4/19/2021	9/5/2021	3/16/2022	10/31/2022	4/19/2021	9/5/2021	3/16/2022
TOC Elevation		NA	NA	NA	NA	NA	NA	NA	NA	39.06	39.06	39.06	39.06	39.06	NA	NA	NA	NA	NA	NA	NA
Depth to Groundwater		27.38	26.27	28.47	27.42	27.57	27.15	28.65	27.59	26.73	25.64	27.52	28.90	27.95	28.96	30.17	29.12	29.59	28.73	29.93	28.92
Groundwater Elevation		NA	NA	NA	NA	NA	NA	NA	NA	12.33	13.42	11.54	10.16	11.11	NA	NA	NA	NA	NA	NA	NA
Total Well Depth		34.56	34.65	34.67	35.20	76.28	76.24	76.25	78.05	110.42	110.42	110.33	110.34	112.70	52.04	58.02	53.10	52.09	61.78	61.78	63.02
Perfluoroheptanoic acid (PFHpA)	100,000	0.0042	0.0044	0.0056	0.0062	0.03	0.044	0.014	0.0038	0.0051 J	0.011	0.018	0.022	0.018	0.01	0.0034	0.0041	0.013	0.0021	0.01	0.01
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.0031	0.0064	0.0027	0.0044	0.027	0.014 J	0.015	0.013	0.029	0.12	0.026	0.028	0.029	0.012	0.015	0.014	0.025	0.0088	0.0064	0.022
Perfluorononanoic acid (PFNA)	100,000	0.0024	0.0012 J	0.0025	0.0012 J	0.002	0.0048 U	0.0021	0.0022	0.006 J	0.0017	0.0029	0.00088 J	0.00042 J	0.00077 J	0.001 J	0.00055 J	0.002	0.0013 J	0.0025	0.0023
Perfluorooctanoic acid (PFOA)	100,000	0.011	0.007	0.0066	0.0085	0.011	0.0094 J	0.0037	0.0045	0.0046 U	0.023	0.0097	0.007	0.0078	0.0041	0.0024	0.0032	0.0071	0.0029	0.0094	0.0097
Perfluorooctane sulfonate (PFOS)	5,000	0.025	0.015	0.031	0.0071	0.047	0.027	0.029	0.012	0.029	0.31	0.047	0.053	0.041	0.075	0.042	0.068	0.13	0.012	0.017	0.034
Perfluorodecanoic Acid (PFDA)	100,000	0.0027	0.001 J	0.00048 U	0.00046 U	0.00062 U	0.0038 U	0.00046 U	0.00043 U	0.0040 U	0.00062 U	0.00038 U	0.00048 U	0.00046 U	0.00038 U	0.00046 U	0.00044 U	0.00063 U	0.00038 U	0.00046 U	0.00043 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	0.00039 U	0.0011 U	0.00036 U	0.00034 U	0.00095	0.011 U	0.00035 U	0.00032 U	0.0032 U	0.00039 U	0.0011 U	0.00036 U	0.00034 U	0.0011 U	0.0029	0.0034	0.0072	0.0011 U	0.00042	0.00059
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																					
Total PFAS	NA	0.0707	0.0634	0.07307	0.05705	0.37335	0.3974	0.16133	0.0571	0.0936	0.5463	0.3127	0.31489	0.28111	0.17849	0.17264	0.20725	0.3989	0.04339	0.08666	0.13162
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.0484**	**0.035**	**0.0484**	**0.0274**	**0.117**	**0.0944**	**0.0638**	**0.0355**	**0.0691**	**0.4657**	**0.1036**	**0.11088**	**0.09622**	**0.09707**	**0.06380**	**0.08985**	**0.1771**	**0.0271**	**0.0453**	**0.078**

Notes:

UCL = Upper Concentration Limit

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

J = Estimated concentration between the method detection limit and reporting limit.

Results in ug/L, micrograms per liter.

U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.

Bold results above Method 1 GW-1 standard (0.02 ug/L).

Sum of six includes estimated values and does not include non-detects (U or <).

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

NA = Not Applicable.

The Method 1 GW-3 Standard for the individual analytes in the Sum of Six ranges from 500 to 40,000 ug/l.

1. Well elevation increased due to soil cap.

Table 3. Groundwater Results for PFAS Compounds ug/L

Sample Location		ARFF Building Area									
Sample ID	UCL	HW-P (m)	HW-P (m)	HW-P (m)	HW-P (m)	HW-P (m)	HW-P (m)	HW-P (m)	HW-Q (s)	HW-Q (s)	HW-Q (m)
Sample Date		10/1/2020	3/18/2021	9/8/2021	3/18/2022	11/2/2022	6/8/2023	12/5/2023	10/1/2020	11/6/2020	10/1/2020
TOC Elevation		40.64	40.64	40.64	40.64	40.64	40.64	40.64	37.89	37.89	37.90
Depth to Groundwater		22.80	22.20	23.67	21.73	24.08	22.39	23.55	21.45	22.04	21.41
Groundwater Elevation		17.84	18.44	16.97	18.91	16.56	18.25	17.09	16.44	15.85	16.49
Total Well Depth		38.30	38.30	38.30	38.28	38.30	30.25	38.26	26.60	26.60	36.79
Perfluoroheptanoic acid (PFHpA)	100,000	0.003	0.017	0.016	0.009	0.0083	0.00451	0.0052	0.0018 J	0.0021	0.00053 U
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.00085	0.0015 J	0.0013 J	0.002	0.0011 J	0.0034	0.021	0.013	0.0087	0.0019
Perfluorononanoic acid (PFNA)	100,000	0.0011	0.006	0.0099	0.009	0.0095	0.00746	0.0073	0.00063 U	0.00063 U	0.00075
Perfluorooctanoic acid (PFOA)	100,000	0.0018	0.0096	0.01	0.0081	0.008	0.00378	0.0055	0.0049	0.0062	0.00095
Perfluorooctane sulfonate (PFOS)	5,000	0.0011	0.0035	0.003	0.0026	0.0022	0.00275	0.04	0.0041	0.0075	0.0049
Perfluorodecanoic Acid (PFDA)	100,000	0.00062 U	0.00038 U	0.00048 U	0.00043 U	0.00065 U	0.00174 U	0.00078 U	0.00062 U	0.00062 U	0.00062 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	0.00092	0.0011 U	0.00036 U	0.00033 U	0.0013 U	0.00174 U	0.0011 U	0.00039 U	0.00039 U	0.00039 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six											
Total PFAS	NA	0.02967	0.17311	0.15362	0.08697	0.0705	0.051382	0.1076	0.0307	0.0346	0.00944
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	0.00785	**0.0376**	**0.0402**	**0.0307**	**0.0291**	**0.0219**	**0.079**	**0.0238**	**0.0245**	0.0085

Sample Location		Yarmouth Road Area													
Sample ID	UCL	HW-S (s)	HW-S (s)	HW-S (s)	HW-S (s)	HW-S(s)	HW-S(s)	HW-S(s)	HW-S (m)	HW-S (m)	HW-S (m)	HW-S (m)	HW-S(m)	HW-S(m)	HW-S(m)
Sample Date		10/1/2020	3/18/2021	9/3/2021	3/31/2022	8/8/2022	6/9/2023	12/6/2023	10/1/2020	3/18/2021	9/3/2021	3/25/2022	8/8/2022	6/9/2023	12/6/2023
TOC Elevation		31.60	31.60	31.60	31.60	31.60	31.60	31.60	31.59	31.59	31.59	31.59	31.59	31.59	31.59
Depth to Groundwater		16.88	16.29	17.30	15.70	16.43	17.59	17.59	17.01	16.35	17.37	15.48	17.94	16.76	17.70
Groundwater Elevation		14.72	15.31	14.30	15.90	15.17	14.01	14.01	14.58	15.24	14.22	16.11	13.65	14.83	13.89
Total Well Depth		22.10	22.10	22.10	22.20	22.15	22.05	22.05	32.04	32.04	32.04	32.05	32.11	32.10	32.11
Perfluoroheptanoic acid (PFHpA)	100,000	0.11	0.14	0.11	0.061	0.16	0.0467	0.09	0.00096	0.0011 J	0.0012 J	0.0018 U	0.0065	0.0257	0.0013 J
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.055	0.083	0.064	0.041	0.12	0.03	0.067	0.0064	0.0073	0.0053	0.0026	0.0074	0.0216	0.005
Perfluorononanoic acid (PFNA)	100,000	0.1	0.024	0.1	0.043	0.16	0.0442	0.18	0.00063 U	0.00057 J	0.00055 J	0.0018 U	0.0017 U	0.0262	0.0019
Perfluorooctanoic acid (PFOA)	100,000	0.062	0.078	0.13	0.05	0.23	0.0521	0.12	0.0013	0.0018 J	0.0014 J	0.0019	0.0049	0.0297	0.0014 J
Perfluorooctane sulfonate (PFOS)	5,000	0.1	0.03	0.048	0.048	0.16	0.185	0.15	0.0058	0.006	0.0094	0.0052	0.0096	0.255	0.017
Perfluorodecanoic Acid (PFDA)	100,000	0.00062 U	0.0038 U	0.012 U	0.0019 U	0.0017 U	0.01 U	0.00082	0.00062 U	0.00038 U	0.00047 U	0.0018 U	0.0017 U	0.00177 U	0.00077
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	3.7	3.1	5.2	0.0019 U	0.0017 U	1.15	2.4	0.0065	0.0067	0.0036	0.023	0.0017 U	0.198	0.011
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six															
Total PFAS	NA	4.8958	4.3105	6.1418	0.5956	1.5581	1.7573	3.4027	0.02471	0.03263	0.02873	0.043	0.0564	0.635542	0.0464
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.427**	**0.355**	**0.452**	**0.243**	**0.83**	**0.358**	0.607	0.01446	0.01677	0.01785	0.0097	**0.0284**	**0.3582**	**0.02737**

Sample Location		Steamship Parking Lot Area				
Sample ID	UCL	HW-K	HW-K	HW-K	HW-K	HW-K
Sample Date		6/19/2019	5/21/2020	3/18/2021	9/2/2021	3/25/2022
TOC Elevation		37.70	37.70	37.70	37.70	37.70
Depth to Groundwater		20.88	20.56	22.87	24.24	22.93
Groundwater Elevation		16.82	17.14	14.83	13.46	14.77
Total Well Depth		44.18	44.18	44.17	44.18	44.17
Perfluoroheptanoic acid (PFHpA)	100,000	0.0051	0.0028	0.0044	0.0086	0.017
Perfluorohexanesulfonic acid (PFHxS)	5,000	<0.002	0.001	0.00066 J	0.0015 J	0.0019
Perfluorononanoic acid (PFNA)	100,000	<0.002	0.0012	0.0037	0.003	0.0087
Perfluorooctanoic acid (PFOA)	100,000	0.0041	0.0019	0.0036	0.0038	0.012
Perfluorooctane sulfonate (PFOS)	5,000	<0.002	0.0016	0.0015 J	0.0019	0.0037
Perfluorodecanoic Acid (PFDA)	100,000	<0.002	0.00062 U	0.00038 U	0.00046 U	0.0019 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	<0.002	0.00039 U	0.0011 U	0.00034 U	0.0019 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six						
Total PFAS	NA	0.0348	0.0275	0.04486	0.09217	0.1864
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	0.0092	0.0085	0.01386	0.0188	**0.0433**

Sample Location		Maher Well Area													
Sample ID	UCL	HW-W(dd)	HW-W(dd)	HW-W(dd)	OW-9S	OW-9S	OW-9S	OW-9M	OW-9M	OW-9D	OW-9D	OW-9D	OW-9DD	OW-9DD	OW-9DD
Sample Date		4/19/2021	9/5/2021	3/16/2022	7/5/2016	12/3/2018	5/8/2020	12/3/2018	5/8/2020	7/5/2016	12/3/2018	5/5/2020	4/11/2017	12/3/2018	10/2/2020
TOC Elevation		NA	NA	NA	23.25	23.25	23.25	23.53	23.53	23.22	23.22	23.22	23.81	23.81	23.81
Depth to Groundwater		28.67	29.89	28.85	12.23	10.80	10.14	11.11	10.45	12.48	10.82	10.15	12.10	11.30	13.04
Groundwater Elevation		NA	NA	NA	11.02	12.45	13.11	12.42	13.08	10.74	12.40	13.07	11.71	12.51	10.77
Total Well Depth		72.10	72.09	73.61	21.35	21.35	21.35	56.20	56.20	68.63	68.63	68.63	86.75	86.75	86.75
Perfluoroheptanoic acid (PFHpA)	100,000	0.0091	0.0073	0.0077	0.014	0.048	0.0064	0.11	0.0061	0.0028	0.033	0.044	0.034	0.015 J	0.0085
Perfluorohexanesulfonic acid (PFHxS)	5,000	0.0086	0.0048	0.02	<0.003	0.023	0.011	0.0056 U	0.0033	0.012	0.12	0.18	0.12	0.042	0.019
Perfluorononanoic acid (PFNA)	100,000	0.0014 J	0.002	0.0015 J	0.0077	0.0087 U	0.0033	0.044	0.0037	0.0036	0.1	0.15	0.059	0.038	0.018
Perfluorooctanoic acid (PFOA)	100,000	0.0046	0.0069	0.0059	0.007	0.032	0.0043	0.052	0.0035	0.0052	0.057	0.088	0.055	0.020 J	0.01
Perfluorooctane sulfonate (PFOS)	5,000	0.015	0.0081	0.035	0.0074	0.024	0.0058	0.0081 J	0.01	0.041	0.52	0.72	0.5	0.14	0.049
Perfluorodecanoic Acid (PFDA)	100,000	0.00038 U	0.00049 U	0.00045 U	NA	0.0061 U	0.00062 U	0.0061 U	0.00062 U	NA	0.0061 U	0.00062 U	0.0040 U	0.0061 U	0.00062 U
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	0.0011 U	0.00036 U	0.0033 U	NA	0.0066 U	0.00039 U	0.64	0.0049	NA	0.19	0.23	0.13	0.062	0.02
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six															
Total PFAS	NA	0.10469	0.0563	0.11378	0.0361	0.618	0.06678	1.7141	0.0816	0.0646	1.217	1.5845	1.02	0.39	0.169
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	**0.0387**	**0.0291**	**0.0701**	**0.0361**	**0.127**	**0.0308**	**0.2141**	**0.0266**	**0.0646**	**0.83**	**1.182**	**0.768**	**0.255**	**0.1045**

Notes:

UCL = Upper Concentration Limit

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

J = Estimated concentration between the method detection limit and reporting limit.

Results in ug/L, micrograms per liter.

U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.

Bold results above Method 1 GW-1 standard (0.02 ug/L).

Sum of six includes estimated values and does not include non-detects (U or <).

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

NA = Not Applicable.

Table 4 - 1,4 Dioxane Groundwater Results ug/L

Sample Location	North Ramp																	Airport Road/Iyannough Road Area							ARFF Building			
Sample ID	HW-1	HW-1	HW-5	HW-12	OW-6	OW-6	HW-4M	HW-4D	HW-204	HW-29	HW-207S	HW-207D	HW-207D	HW-19D	HW-19D	HW-X(s)	HW-X(m)	HW-A(D)	HW-A(D)	HW-B(D)	HW-N	HW-O	HW-U(d)	HW-V(m)	HW-L(s)	HW-L(m)	HW-L(d)	HW-L(d)
Sample Date	5/7/2015	8/5/2019	5/7/2015	5/7/2015	5/7/2015	9/27/2019	4/5/2017	4/5/2017	9/27/2019	9/27/2019	9/27/2019	4/5/2017	9/27/2019	4/5/2017	9/27/2019	9/10/2021	9/10/2021	4/5/2017	8/5/2019	4/5/2017	8/5/2019	8/5/2019	10/2/2020	10/2/2020	10/7/2020	10/7/2020	7/2/2019	5/13/2020
1,4-Dioxane	<0.152	<0.25	<0.150	<0.150	<0.150	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.19	<0.22	<0.25	<0.25	<0.25	<0.25	<0.25	**0.73**	**0.8**	<0.2	<0.2	**0.727**	**0.75**

Sample Location	Maher Well Field															Deployment Area	
Sample ID	OW-9M	OW-9D	OW-9D	OW-9D	OW-9DD	OW-9DD	OW-9DD	OW-18M	OW-18D	OW-18D	OW-18D	OW-19M	OW-19D	OW-19D	OW-19D	HW-E	HW-J
Sample Date	5/28/2015	5/28/2015	12/3/2018	5/5/2020	5/28/2015	4/11/2017	12/3/2018	4/11/2017	4/11/2017	12/7/2018	5/13/2020	4/11/2017	4/11/2017	12/7/2018	5/13/2020	9/10/2021	9/10/2021
1,4-Dioxane	<0.141	<0.141	<0.25	<0.19	**0.926**	**0.838**	**0.732**	<0.25	**0.552**	<0.25	**0.35**	<0.25	**0.800**	<0.25	**0.3**	<0.20	<0.20

Notes:
Results in ug/L, micrograms per liter.
< = Not detected by the laboratory above the reporting limit. Reporting limit shown.
Bold results above Method 1 GW-1 standard (0.3 ug/L).
The Method 1 GW-2 standard for 1,4-dioxane is 6,000 ug/l.
The Method 1 GW-3 standard for 1,4-dioxane is 50,000 ug/l.

Table 5. ARFF Concentrate Analytical Results ug/L

Sample ID	Foam Mix
Sample Date	12/9/2016
Perfluoroheptanoic acid (PFHpA)	3.4 J
Perfluorohexanesulfonic acid (PFHxS)	2.1 J
Perfluorononanoic acid (PFNA)	93
Perfluorooctanoic acid (PFOA)	19
Perfluorooctane sulfonate (PFOS)	5 U
Perfluorodecanoic Acid (PFDA)	2.8 J
6:2 FTS	33
Total PFAS	222.5
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	120.3

Notes:

1. U = Not detected by the laboratory above the Method Detection Limit. Method Detection Limit shown.
2. Results in ug/L, micrograms per liter.
3. Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U).
4. Sample is AFFF concentrate.
5. J = Estimated concentration between the Method Detection Limit and the Laboratory Reporting Limit.

Table 6. SPLP Results ug/L

Sample ID	DL4 4'	DL5 2'	DL8 (4')	DL14(0-1')	Stockpile West	Stockpile East	ARFF Rubber Roof	ARFF Asphalt Roof
Sample Date	9/26/2017	9/26/2017	9/26/2017	9/26/2017	10/10/2017	10/10/2017	11/17/2020	11/17/2020
Perfluoroheptanoic acid (PFHpA)	0.011 U	0.011 U	0.065 J	0.17	0.011 U	0.011 U	0.00279	0.0002 U
Perfluorohexanesulfonic acid (PFHxS)	0.0072 U	0.0072 U	0.036 U	0.01 J	0.0072 U	0.0072 U	0.00034 U	0.00036 U
Perfluorononanoic acid (PFNA)	0.16	0.0032 U	0.052 J	0.37	0.0032 U	0.0032 U	0.00068 J	0.00028 U
Perfluorooctanoic acid (PFOA)	0.012 J	0.042	0.6	0.87	0.0037 U	0.0037 U	0.0073	0.00021 U
Perfluorooctane sulfonate (PFOS)	0.013 J	0.0072 U	0.036 U	0.19	0.0072 U	0.0072 U	0.00045 U	0.00202
Perfluorodecanoic Acid (PFDA)	0.0052 U	0.0052 U	0.026 U	0.34	0.0052 U	0.0052 U	0.000364 J	0.000271 U
6:2 FTS	0.067	0.0072 U	25	7.13	0.034 J	0.024 J	0.0154 J	0.0017 J
Total PFAS	0.195	0.042	26.25	20.195	0.034	0.024	0.072723	0.07957
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.185	0.042	0.717	1.95	0.011 U	0.011 U	0.011133	0.00202

Notes:

1. U = Not detected by the laboratory above the Method Detection Limit. Method Detection Limit shown.
2. Results in ug/L, micrograms per liter.
3. Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U).

Table 7: Background PFAS Levels in Soil and Soil Stockpile Samples

Background Sample Locations																									
Sample ID	Method 1 Standard		Stockpile West	Stockpile East	Loam Pile	BG-1 0-1'	BG-2 0-1'	BG-3 0-1'	BG-4 0-1'	BG-5 0-1'	BG-6 0-1'	BG-7 0-1'	BG-8 0-1'	BG-9 0-1'	BG-10 0-1'	BG-11 0-1'	BG-12 0-1'	BG-13 0-1'	BG-14 0-1'	BG-15 0-1'	BG-16 0-1'	BG-17 0-1'	BG-18 0-1'	BG-19 0-1'	BG-20 0-1'
Sample Date	S-1/GW-1	S-1/GW-3	10/10/2017	10/10/2017	10/10/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	10/26/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017
Sample Location			On-Airport	On-Airport	On-Airport	Off-Airport	On-Airport	On-Airport	On-Airport	On-Airport	On-Airport	On-Airport	On-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport	Off-Airport
Perfluoroheptanoic acid (PFHpA)	0.5	300	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.18 J	0.17 U	0.18 J	0.17 U	0.17 U	0.23 J	0.17 U	0.17 U	0.19 U	0.19 U	0.19 U	0.19 U	0.44 J	0.19 U	0.19 U	0.35 J	0.19 U	0.46 J
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U	0.24 U	**0.39 J**	0.24 U	0.24 U	**0.57 J**	**0.47 J**	0.24 U	**0.49 J**	0.24 U	0.24 U
Perfluorooctanoic acid (PFOA)	0.72	300	0.26 U	0.26 U	0.26 U	0.58 J	0.26 U	0.26 U	0.16 U	0.47 J	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	**0.75 J**	0.67 J	0.33 J	0.25 U	0.46 J	0.37 J	0.36 J	0.5 J	0.25 U	**0.86 J**
Perfluorononanoic acid (PFNA)	0.32	300	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.22 U	0.29 J	0.22 U	0.22 U	**0.53 J**	0.22	**0.67 J**	**0.41 J**	0.22 U	0.22 U
Perfluorooctane sulfonate (PFOS)	2	300	0.38 J	0.39 J	0.81 J	0.21 U	0.7 J	0.38 J	**2.3**	0.41 J	0.32 J	0.33 J	0.31 J	1.3	0.62 J	0.41 J	0.76 J	0.99	0.26 U	**3.1**	2	0.36 J	**2.3**	0.41 J	0.44 J
Perfluorodecanoic Acid (PFDA)	0.3	300	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.28 U	0.28 U	**0.36 J**	0.28 U	**0.31 J**	**0.41 J**	0.28 U	**0.41 J**	0.28 U	0.28 U
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six																									
Total PFAS	NA	NA	1.78	0.91	0.81	1.47	0.7	0.56	3.21	1.31	0.32	0.3	0.84	1.3	0.62	1.16	2.73	1.68	0	6.79	3.77	5.09	5.45	0.41	2.43
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	0.38	0.39	0.81	0.58	0.7	0.56	2.3	1.06	0.32	0.33	0.54	1.3	0.62	1.16	2.11	1.68	0	5.41	3.47	1.39	4.46	0.41	1.76

Notes:
J = Estimated concentration between the method detection limit and reporting limit.
Results in ug/kg, micrograms per kilogram.
U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.
Bold results above the proposed Method 1 S-1/GW-1 standard.
Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).
Sum of six includes estimated values and does not include non-detects (U or <).

Table 8. Surface Water Results for PFAS ug/L

	Surface Water		
Sample ID	Kmart	LP-1	UGP-1
Sample Date	6/20/2017	7/11/19	7/11/19
Perfluoroheptanoic acid (PFHpA)	0.0033 U	<0.01	<0.02
Perfluorohexanesulfonic acid (PFHxS)	0.0034 U	<0.01	<0.02
Perfluorononanoic acid (PFNA)	0.0043 J	<0.01	<0.02
Perfluorooctanoic acid (PFOA)	0.0026 U	<0.01	<0.02
Perfluorooctane sulfonate (PFOS)	0.0046 U	<0.01	<0.02
Perfluorodecanoic Acid (PFDA)	0.0040 U	<0.01	<0.02
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six			
Total PFAS	0.0174	0.018	0.047
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	0.0043	<0.01	<0.02

Notes:

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

J = Estimated concentration between the method detection limit and reporting limit.

Results in ug/L, micrograms per liter.

U= Not detected by the laboratory above the method detection limit. Method detection limit shown.

Sum of six includes estimated values and does not include non-detects (U or <).

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

Currently MassDEP has not issued a surface water standard for PFAS.

The Method 1 GW-1 Standard for the Sum of Six is 0.02 ug/l.

The Method 1 GW-3 Standard for the individual analytes in the Sum of Six range from 500 to 40,000 ug/l.

Table 9: Ratio of Stable Isotopes Oxygen-18 and Hydrogen-2 Laboratory Results

Sample Date	Lab Sample ID	HW Sample ID	Stable Isotope Oxygen-18			Stable Isotope Hydrogen-2		
			δ18O (V-SMOW)	Atm %	Expected Values	δ18O (V-SMOW)	Atm %	Expected Values
11/7/2018	1811299-2	HW-I	-6.92	0.20	-	-40.41	0.01494	-
			-6.77	0.20	-	-40.17	0.01495	-
	1811299-4	HW-E	-6.79	0.20	-	-38.56	0.01497	-
			-6.85	0.20	-	-38.87	0.01497	-
	1811299-5	HW-F	-6.9	0.20	-	-38.28	0.01498	-
			-6.88	0.20	-	-38.15	0.01498	-
	1811299-7	SW-2	-2.67	0.20	-	-18.65	0.01528	-
			-2.61	0.20	-	-20.42	0.01526	-
						-23.04	0.01521	-
12/3/2018	1812198-1	HW-G(S)	-6.74	0.20	-	-38.19	0.01498	-
			-6.93	0.20	-	-37.87	0.01498	-
	1812198-2	HW-G(M)	-7.53	0.20	-	-44.34	0.01498	-
			-7.57	0.20	-	-44.39	0.01498	-
	1812198-3	HW-G(D)	-7.18	0.20	-	-44.15	0.01489	-
			-7.45	0.20	-	-44.56	0.01488	-
	1812198-4	OW-9S	-7.29	0.20	-	-41.86	0.01492	-
			-7.41	0.20	-	-42.94	0.0149	-
	1812198-5	OW-9D	-7.76	0.20	-	-47.91	0.01483	-
			-7.71	0.20	-	-46.82	0.01484	-
					-	-47.20	0.01484	-
	1812198-6	OW-9DD	-7.52	0.20	-	-45.58	0.01486	-
			-7.57	0.20	-	-45.48	0.01487	-
	1812198-7	OW-9M	-7.13	0.20	-	-41.44	0.01493	-
			-7.24	0.20	-	-43.40	0.0149	-
12/7/2018	1812232-1	OW-18S	-7.58	0.20	-	-49.29	0.01481	-
			-7.54	0.20	-	-49.66	0.0148	-
	1812232-2	OW-18M	-6.95	0.20	-	-42.64	0.01491	-
			-6.89	0.20	-	-42.57	0.01491	-
	1812232-3	OW-18D	-7.28	0.20	-	-44.76	0.01488	*
			-7.36	0.20	-	-41.61	0.01493	*
QA/QC	IAEA OH-14	-	-5.64	0.20	-5.6	-37.45	0.01499	-37.70
	IAEA OH-15	-	-9.59	0.20	-9.41	-77.89	0.01436	-78
	IAEA OH-16	-	-15.72	0.20	-15.41	-	-	-113.8
	Antarc IC	-	-29.83	0.19	-30	-	-	-239.69

Table 10. Fire Truck Spray Water PFAS Results ug/L

	Fire Truck Spray Water Spray											
Sample ID	Hose		Roof		Bumper		Officer Side Handline		Driver side-Rear		Officer side-Rear	
Sample Date	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019	8/22/2019	11/12/2019
Perfluoroheptanoic acid (PFHpA)	0.073	<0.002	0.0045	<0.002	0.0039	<0.002	0.027	<0.002	0.0055	<0.002	0.081	0.0021
Perfluorohexanesulfonic acid (PFHxS)	0.0059	<0.002	0.0033	<0.002	0.0039	<0.002	0.004	<0.002	0.0048	<0.002	0.0043	<0.002
Perfluorononanoic acid (PFNA)	0.011	<0.002	0.0026	<0.002	0.0031	<0.002	0.013	<0.002	0.003	<0.002	0.016	<0.002
Perfluorooctanoic acid (PFOA)	0.088	0.0062	0.0087	<0.002	0.01	<0.002	0.039	<0.002	0.011	<0.002	0.076	0.0041
Perfluorooctane sulfonate (PFOS)	0.009	0.0021	0.0068	<0.002	0.006	<0.002	0.0087	<0.002	0.0093	<0.002	0.0086	<0.002
Perfluorodecanoic Acid (PFDA)	0.014	<0.002	0.004	<0.002	0.0045	<0.002	0.032	<0.002	0.0049	<0.002	0.032	<0.002
Total PFAS	5.7017	0.3391	0.9195	0.0205	0.7817	0.0167	4.1098	0.0481	0.8302	0.0087	5.4701	0.086
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	**0.2009**	0.0083	**0.0299**	<0.002	**0.0314**	<0.002	**0.1237**	<0.002	**0.0385**	<0.002	**0.2179**	0.0041

Notes:

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

Results in ug/L, micrograms per liter.

Bold results above proposed MassDEP GW-1 standard (0.02 ug/L)

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

Table 11: Total Organic Carbon Levels (mg/kg)

Total Organic Carbon Concentration																	
Sample ID	HW-W dd 3-5 ft	HW-W dd 8-10 ft	HW-W dd 18-20 ft	HW-W dd 23-25 ft	HW-W dd 28-30 ft	HW-W dd 33-35 ft	HW-W dd 38-40 ft	HW-W dd 43-45 ft	HW-W dd 48-50 ft	HW-W dd 58-60 ft	HW-W dd 63-65 ft	S1 0-2ft	S1 2-4ft	S1 4-6ft	S2 0-2ft	S2 2-4ft	S2 4-6ft
Sample Date	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021	4/19/2021
Sample Depth (ft below grade)	3-5	8-10	18-20	23-25	28-30	33-35	38-40	43-45	48-50	58-60	63-65	0-2	2-4	4-6	0-2	2-4	4-6
Sample Location	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Water Department Property	Deployment Area	Deployment Area	Deployment Area	Deployment Area	Deployment Area	Deployment Area
Total Organic Carbon	94.8 U	94.3 U	96.5 U	93.9 U	95.7 U	93.5 U	96.9 U	95.7 U	95.7 U	95.7 U	95.7 U	28,900	1,150	180	1,550	95.1 U	3,500

Notes:
Results in mg/kg, milligrams per kilogram.
U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.

Table 12.Runway 6/24 Surface Soil Results ug/kg

Sample Location	Surface Soils								
Sample ID	Method 1 Standard		UCL	6-24 A (0-1)	6-24 A (1-2)	6-24 B (0-1)	6-24 B (1-2)	6-24 C (0-1)	6-24 C (1-2)
Sample Date	S-1/GW-1	S-1/GW-3		3/2/2022	3/2/2022	3/2/2022	3/2/2022	3/4/2022	3/4/2022
Perfluoroheptanoic acid (PFHpA)	0.5	300	4,000	<0.051	<0.046	0.068 J	<0.049	<0.055	0.079 J
Perfluorohexanesulfonic acid (PFHxS)	0.3	300	4,000	<0.068	<0.062	<0.064	<0.066	<0.074	<0.069
Perfluorooctanoic acid (PFOA)	0.72	300	4,000	<0.047	0.115 J	0.136 J	0.106 J	0.058 J	0.156 J
Perfluorononanoic acid (PFNA)	0.32	300	4,000	<0.085	<0.077	0.115 J	<0.082	<0.091	<0.085
Perfluorooctane sulfonate (PFOS)	2	300	4,000	0.318	0.361	0.471	0.196 J	0.654	0.297
Perfluorodecanoic Acid (PFDA)	0.3	300	4,000	<0.076	<0.069	<0.071	<0.073	<0.082	<0.076
6:2 Fluorotelomer sulfonate (6:2 FTS)	NA	NA	NA	<0.203	<0.184	<0.19	<0.197	<0.219	<0.203
Sum of Laboratory Reported PFAS (Total PFAS) and Sum of Six									
Total PFAS	NA	NA	NA	0.457	0.731	1.312	0.55	1.123	0.85
Sum of Six (PFHpA,PFHxS,PFOA, PFOS, PFNA, and PFDA)	NA	NA	NA	0.318	0.476	0.79	0.302	0.712	0.532

Notes:

< = Not detected by the laboratory above the reporting limit. Reporting limit shown.

J = Estimated concentration between the method detection limit and reporting limit.

Results in ug/kg, micrograms per kilogram.

U= Not detected by the Laboratory above the method detection limit. Method detection limit shown.

Bold results above the Method 1 S-1/GW-1 standard.

Total PFAS is the sum of all laboratory detected PFAS analytes including estimated values and does not include non-detects (U or <).

Sum of six includes estimated values and does not include non-detects (U or <).

UCL = Upper Concentration Limit

Sample depth in feet below grade in parenthesis

APPENDIX A

PIP COMMENTS/QUESTIONS

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

January 2, 2024

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis
Client Job Number:
Project Number: 22071
Laboratory Work Order Number: 23L1211

Enclosed are results of analyses for samples as received by the laboratory on December 8, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kaitlyn A. Feliciano
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 1/2/2024

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 22071

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23L1211

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Hyannis

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
HW-I(S)	23L1211-01	Ground Water		SOP-454 PFAS	
HW-I(M)	23L1211-02	Ground Water		SOP-454 PFAS	
HW-I(D)	23L1211-03	Ground Water		SOP-454 PFAS	
HW-P(S)	23L1211-04	Ground Water		SOP-454 PFAS	
HW-P(M)	23L1211-05	Ground Water		SOP-454 PFAS	
HW-3	23L1211-06	Ground Water		SOP-454 PFAS	
HW-302	23L1211-07	Ground Water		SOP-454 PFAS	
HW--S(S)	23L1211-08	Ground Water		SOP-454 PFAS	
HW--S(M)	23L1211-09	Ground Water		SOP-454 PFAS	
ME-1	23L1211-10	Ground Water		SOP-454 PFAS	
ME-2	23L1211-11	Ground Water		SOP-454 PFAS	
ME-3	23L1211-12	Ground Water		SOP-454 PFAS	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

SOP-454 PFAS

Qualifications:

L-01

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:

N-EtFOSAA (NEtFOSAA)
B361067-BSD1

Perfluorononanesulfonic acid (PFNS)
B361067-BSD1

L-02

Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.

Analyte & Samples(s) Qualified:

N-MeFOSAA (NMeFOSAA)
B361067-BS1, B361067-BSD1

PF-17

Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.

Analyte & Samples(s) Qualified:

D3-NMeFOSAA
23L1211-08[HW--S(S)]

D5-NEtFOSAA
23L1211-08[HW--S(S)]

M2-6:2FTS
23L1211-01[HW-I(S)], 23L1211-02[HW-I(M)], 23L1211-08[HW--S(S)]

PF-19

Sample re-analyzed at a dilution that was re-fortified with internal standard.

Analyte & Samples(s) Qualified:

6:2 Fluorotelomersulfonic acid (6:2FTS A)
23L1211-08RE2[HW--S(S)]

Perfluorooctanesulfonic acid (PFOS)
23L1211-08RE1[HW--S(S)]

Perfluoropentanoic acid (PFPeA)
23L1211-08RE1[HW--S(S)]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:

D3-NMeFOSAA
23L1211-03[HW-I(D)], 23L1211-07[HW-302], 23L1211-09[HW--S(M)], 23L1211-10[ME-1]

D5-NEtFOSAA
23L1211-03[HW-I(D)], 23L1211-07[HW-302], 23L1211-09[HW--S(M)], 23L1211-10[ME-1]

M2-4:2FTS
23L1211-01[HW-I(S)], 23L1211-02[HW-I(M)], 23L1211-03[HW-I(D)], 23L1211-04[HW-P(S)], 23L1211-05[HW-P(M)], 23L1211-06[HW-3], 23L1211-07[HW-302], 23L1211-08[HW--S(S)], 23L1211-09[HW--S(M)], 23L1211-10[ME-1], 23L1211-11[ME-2], 23L1211-12[ME-3], B361067-BS1, B361067-BSD1

M2-6:2FTS
23L1211-03[HW-I(D)], 23L1211-07[HW-302], 23L1211-09[HW--S(M)], 23L1211-10[ME-1]

M2-8:2FTS
23L1211-07[HW-302], 23L1211-10[ME-1], 23L1211-12[ME-3]

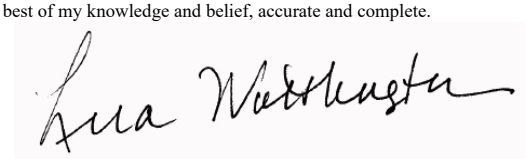
M2PFTA
23L1211-07[HW-302], 23L1211-08[HW--S(S)]

M7PFUnA
23L1211-07[HW-302], 23L1211-10[ME-1]

MPFDoA
23L1211-07[HW-302], 23L1211-10[ME-1]

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

con-test®
A Pace Analytical® Laboratory

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW-I(S) | Sampled: 12/5/2023 10:10

Sample ID: 23L1211-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	47	1.7	0.64	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorobutanesulfonic acid (PFBS)	1.3	1.7	0.64	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoropentanoic acid (PFPeA)	160	1.7	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorohexanoic acid (PFHxA)	110	1.7	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.7	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.7	0.64	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	0.90	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	0.51	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.0	1.7	0.83	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorodecanoic acid (PFDA)	ND	1.7	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.7	0.80	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.7	0.64	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoroheptanesulfonic acid (PFHpS)	28	1.7	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.7	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.7	0.90	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.7	0.83	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.7	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.7	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.7	0.90	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.7	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.7	0.89	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	14	1.7	0.91	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.4	1.7	0.68	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorohexanesulfonic acid (PFHxS)	40	1.7	0.62	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.7	0.62	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.7	0.56	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.7	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.1	1.7	0.66	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.7	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluoroheptanoic acid (PFHpA)	100	1.7	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorooctanoic acid (PFOA)	140	1.7	1.2	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorooctanesulfonic acid (PFOS)	140	1.7	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW
Perfluorononanoic acid (PFNA)	150	1.7	0.80	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:23	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW-I(M) | Sampled: 12/5/2023 12:00

Sample ID: 23L1211-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.6	1.9	0.71	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoropentanoic acid (PFPeA)	1.9	1.9	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorohexanoic acid (PFHxA)	1.7	1.9	0.78	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.99	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.56	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.91	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorodecanoic acid (PFDA)	ND	1.9	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.9	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.91	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.99	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.97	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorohexanesulfonic acid (PFHxS)	7.2	1.9	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.62	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	1.2	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.82	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluoroheptanoic acid (PFHpA)	1.8	1.9	0.81	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorooctanoic acid (PFOA)	ND	1.9	1.3	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorooctanesulfonic acid (PFOS)	8.1	1.9	0.81	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW
Perfluorononanoic acid (PFNA)	ND	1.9	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 14:31	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW-I(D) | Sampled: 12/5/2023 11:15

Sample ID: 23L1211-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	42	1.8	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorobutanesulfonic acid (PFBS)	1.2	1.8	0.67	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoropentanoic acid (PFPeA)	120	1.8	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorohexanoic acid (PFHxA)	85	1.8	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.87	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorodecanoic acid (PFDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.84	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoroheptanesulfonic acid (PFHpS)	1.4	1.8	0.74	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorohexanesulfonic acid (PFHxS)	23	1.8	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	1.1	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoropentanesulfonic acid (PFPeS)	1.4	1.8	0.69	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluoroheptanoic acid (PFHpA)	23	1.8	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorooctanoic acid (PFOA)	19	1.8	1.2	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorooctanesulfonic acid (PFOS)	94	1.8	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW
Perfluorononanoic acid (PFNA)	1.4	1.8	0.84	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:07	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW-P(S) | Sampled: 12/5/2023 13:15

Sample ID: 23L1211-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	16	2.0	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoropentanoic acid (PFPeA)	43	2.0	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorohexanoic acid (PFHxA)	19	2.0	0.81	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.59	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.0	2.0	0.95	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorodecanoic acid (PFDA)	ND	2.0	0.83	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.92	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
N-EtFOSAA (NEtFOSAA)	ND	2.0	0.80	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
N-MeFOSAA (NMeFOSAA)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorooctanesulfonamide (FOSA)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorononanesulfonic acid (PFNS)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.0	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorohexanesulfonic acid (PFHxS)	1.8	2.0	0.71	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.6	2.0	1.2	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.85	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluoroheptanoic acid (PFHpA)	7.6	2.0	0.84	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorooctanoic acid (PFOA)	3.4	2.0	1.4	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorooctanesulfonic acid (PFOS)	2.4	2.0	0.85	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW
Perfluorononanoic acid (PFNA)	13	2.0	0.92	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:14	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW-P(M) | Sampled: 12/5/2023 15:55

Sample ID: 23L1211-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.8	1.9	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoropentanoic acid (PFPeA)	13	1.9	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorohexanoic acid (PFHxA)	7.6	1.9	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.97	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.55	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	0.89	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorodecanoic acid (PFDA)	ND	1.9	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.86	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoroheptanesulfonic acid (PFHpS)	1.8	1.9	0.77	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.89	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.97	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.96	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorohexanesulfonic acid (PFHxS)	21	1.9	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	1.1	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoropentanesulfonic acid (PFPeS)	1.4	1.9	0.71	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.80	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluoroheptanoic acid (PFHpA)	5.2	1.9	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorooctanoic acid (PFOA)	5.5	1.9	1.3	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorooctanesulfonic acid (PFOS)	40	1.9	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW
Perfluorononanoic acid (PFNA)	7.3	1.9	0.86	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:22	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW-3 | Sampled: 12/6/2023 10:30

Sample ID: 23L1211-06

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	29	1.9	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorobutanesulfonic acid (PFBS)	1.3	1.9	0.70	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoropentanoic acid (PFPeA)	110	1.9	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorohexanoic acid (PFHxA)	77	1.9	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.99	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.56	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	5.4	1.9	0.91	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorodecanoic acid (PFDA)	ND	1.9	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoroheptanesulfonic acid (PFHpS)	4.1	1.9	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.99	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.91	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.97	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.97	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorohexanesulfonic acid (PFHxS)	30	1.9	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.62	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	130	1.9	1.2	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.1	1.9	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoroundecanoic acid (PFUnA)	2.5	1.9	0.81	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluoroheptanoic acid (PFHpA)	18	1.9	0.80	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorooctanoic acid (PFOA)	15	1.9	1.3	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorooctanesulfonic acid (PFOS)	44	1.9	0.81	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW
Perfluorononanoic acid (PFNA)	9.2	1.9	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:29	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW-302 | Sampled: 12/6/2023 10:55

Sample ID: 23L1211-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	15	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoropentanoic acid (PFPeA)	47	1.8	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorohexanoic acid (PFHxA)	24	1.8	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.54	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.7	1.8	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorodecanoic acid (PFDA)	1.6	1.8	0.76	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorododecanoic acid (PFDoA)	0.87	1.8	0.85	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoroheptanesulfonic acid (PFHpS)	0.79	1.8	0.75	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.96	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.87	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorooctanesulfonamide (FOSA)	1.3	1.8	0.93	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.97	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorohexanesulfonic acid (PFHxS)	8.4	1.8	0.66	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.60	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	26	1.8	1.1	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoroundecanoic acid (PFUnA)	3.8	1.8	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluoroheptanoic acid (PFHpA)	12	1.8	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorooctanoic acid (PFOA)	11	1.8	1.2	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorooctanesulfonic acid (PFOS)	21	1.8	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW
Perfluorononanoic acid (PFNA)	33	1.8	0.85	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:36	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW--S(S) | Sampled: 12/6/2023 11:30

Sample ID: 23L1211-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	50	2.0	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorobutanesulfonic acid (PFBS)	1.8	2.0	0.73	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoropentanoic acid (PFPeA)	180	20	7.8	ng/L	10	PF-19	SOP-454 PFAS	12/19/23	12/21/23 13:45	QNW
Perfluorohexanoic acid (PFHxA)	140	2.0	0.80	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
11Cl-PF3OUdS (F53B Major)	ND	2.0	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
9Cl-PF3ONS (F53B Minor)	ND	2.0	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	0.58	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorodecanoic acid (PFDA)	ND	2.0	0.82	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorododecanoic acid (PFDoA)	ND	2.0	0.91	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoroheptanesulfonic acid (PFHpS)	15	2.0	0.80	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
N-EtFOSAA (NEtFOSAA)	ND	2.0	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
N-MeFOSAA (NMeFOSAA)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorotetradecanoic acid (PFTA)	ND	2.0	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	0.81	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorooctanesulfonamide (FOSA)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorononanesulfonic acid (PFNS)	ND	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	3.9	2.0	1.0	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.4	2.0	0.77	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorohexanesulfonic acid (PFHxS)	67	2.0	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	0.64	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2400	98	59	ng/L	50	PF-19	SOP-454 PFAS	12/19/23	12/21/23 14:44	QNW
Perfluoropentanesulfonic acid (PFPeS)	3.6	2.0	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoroundecanoic acid (PFUnA)	ND	2.0	0.84	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluoroheptanoic acid (PFHpA)	90	2.0	0.83	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorooctanoic acid (PFOA)	120	2.0	1.3	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW
Perfluorooctanesulfonic acid (PFOS)	150	20	8.3	ng/L	10	PF-19	SOP-454 PFAS	12/19/23	12/21/23 13:45	QNW
Perfluorononanoic acid (PFNA)	180	2.0	0.91	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:43	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: HW--S(M) | Sampled: 12/6/2023 11:55

Sample ID: 23L1211-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.7	1.8	0.69	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoropentanoic acid (PFPeA)	4.5	1.8	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorohexanoic acid (PFHxA)	2.6	1.8	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.96	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.54	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorodecanoic acid (PFDA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.85	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.96	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.97	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorohexanesulfonic acid (PFHxS)	5.0	1.8	0.66	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.60	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	11	1.8	1.1	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.79	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluoroheptanoic acid (PFHpA)	1.3	1.8	0.78	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorooctanoic acid (PFOA)	1.4	1.8	1.3	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorooctanesulfonic acid (PFOS)	17	1.8	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW
Perfluorononanoic acid (PFNA)	1.9	1.8	0.85	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:51	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: ME-1 | Sampled: 12/6/2023 14:17

Sample ID: 23L1211-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	18	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorobutanesulfonic acid (PFBS)	2.8	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoropentanoic acid (PFPeA)	53	1.8	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorohexanoic acid (PFHxA)	33	1.8	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.54	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.88	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorodecanoic acid (PFDA)	0.86	1.8	0.76	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.85	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.1	1.8	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.96	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.87	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.96	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.1	1.8	0.71	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorohexanesulfonic acid (PFHxS)	38	1.8	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.60	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	22	1.8	1.1	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.4	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.71	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluoroheptanoic acid (PFHpA)	15	1.8	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorooctanoic acid (PFOA)	19	1.8	1.2	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorooctanesulfonic acid (PFOS)	75	1.8	0.78	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW
Perfluorononanoic acid (PFNA)	12	1.8	0.85	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 15:58	QNW

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Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: ME-2 | Sampled: 12/6/2023 14:05

Sample ID: 23L1211-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	15	1.8	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorobutanesulfonic acid (PFBS)	4.7	1.8	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoropentanoic acid (PFPeA)	52	1.8	0.72	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorohexanoic acid (PFHxA)	37	1.8	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.4	1.8	0.87	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorodecanoic acid (PFDA)	0.86	1.8	0.75	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.84	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.4	1.8	0.74	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.5	1.8	0.71	ng/L	1	J	SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorohexanesulfonic acid (PFHxS)	46	1.8	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.65	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	70	1.8	1.1	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoropentanesulfonic acid (PFPeS)	3.6	1.8	0.69	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluoroheptanoic acid (PFHpA)	17	1.8	0.76	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorooctanoic acid (PFOA)	16	1.8	1.2	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorooctanesulfonic acid (PFOS)	70	1.8	0.77	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW
Perfluorononanoic acid (PFNA)	11	1.8	0.84	ng/L	1		SOP-454 PFAS	12/19/23	12/20/23 16:05	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Hyannis | Sample Description: | Work Order: 23L1211

Date Received: 12/8/2023

Field Sample #: ME-3 | Sampled: 12/6/2023 14:10

Sample ID: 23L1211-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	12	1.8	0.67	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorobutanesulfonic acid (PFBS)	3.0	1.8	0.67	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoropentanoic acid (PFPeA)	36	1.8	0.72	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorohexanoic acid (PFHxA)	27	1.8	0.74	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorodecanoic acid (PFDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.83	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.1	1.8	0.74	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.72	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorooctanesulfonamide (FOSA)	9.9	1.8	0.92	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	2.1	1.8	0.95	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.5	1.8	0.70	ng/L	1	J	SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorohexanesulfonic acid (PFHxS)	38	1.8	0.64	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.64	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	14	1.8	1.1	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.6	1.8	0.69	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoroundecanoic acid (PFUnA)	0.98	1.8	0.77	ng/L	1	J	SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluoroheptanoic acid (PFHpA)	12	1.8	0.76	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorooctanoic acid (PFOA)	16	1.8	1.2	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorooctanesulfonic acid (PFOS)	94	1.8	0.77	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW
Perfluorononanoic acid (PFNA)	8.7	1.8	0.83	ng/L	1		SOP-454 PFAS	12/27/23	1/2/24 12:08	QNW

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Sample Extraction Data

Prep Method:SOP 454-PFAAS **Analytical Method:SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23L1211-01 [HW-I(S)]	B361025	289	1.00	12/19/23
23L1211-02 [HW-I(M)]	B361025	262	1.00	12/19/23
23L1211-03 [HW-I(D)]	B361025	276	1.00	12/19/23
23L1211-04 [HW-P(S)]	B361025	251	1.00	12/19/23
23L1211-05 [HW-P(M)]	B361025	268	1.00	12/19/23
23L1211-06 [HW-3]	B361025	263	1.00	12/19/23
23L1211-07 [HW-302]	B361025	273	1.00	12/19/23
23L1211-08 [HW--S(S)]	B361025	255	1.00	12/19/23
23L1211-08RE1 [HW--S(S)]	B361025	255	1.00	12/19/23
23L1211-08RE2 [HW--S(S)]	B361025	255	1.00	12/19/23
23L1211-09 [HW--S(M)]	B361025	271	1.00	12/19/23
23L1211-10 [ME-1]	B361025	273	1.00	12/19/23
23L1211-11 [ME-2]	B361025	276	1.00	12/19/23

Prep Method:SOP 454-PFAAS **Analytical Method:SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23L1211-12 [ME-3]	B361067	277	1.00	12/27/23

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B361025 - SOP 454-PFAAS										
Blank (B361025-BLK1)				Prepared: 12/19/23 Analyzed: 12/20/23						
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L							
LCS (B361025-BS1)				Prepared: 12/19/23 Analyzed: 12/20/23						
Perfluorobutanoic acid (PFBA)	8.84	1.9	ng/L	9.51		92.9	73-129			
Perfluorobutanesulfonic acid (PFBS)	7.64	1.9	ng/L	8.42		90.8	72-130			
Perfluoropentanoic acid (PFPeA)	8.72	1.9	ng/L	9.51		91.7	72-129			
Perfluorohexanoic acid (PFHxA)	8.79	1.9	ng/L	9.51		92.4	72-129			
11Cl-PF3OUdS (F53B Major)	8.69	1.9	ng/L	8.96		96.9	43.3-138			
9Cl-PF3ONS (F53B Minor)	9.27	1.9	ng/L	8.87		105	52-140			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.14	1.9	ng/L	8.96		90.8	53.7-152			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.65	1.9	ng/L	9.51		80.4	42.1-145			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.40	1.9	ng/L	9.13		91.9	67-138			
Perfluorodecanoic acid (PFDA)	9.70	1.9	ng/L	9.51		102	71-129			
Perfluorododecanoic acid (PFDoA)	9.73	1.9	ng/L	9.51		102	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	9.79	1.9	ng/L	8.47		116	52.7-147			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B361025 - SOP 454-PFAAS										
LCS (B361025-BS1)				Prepared: 12/19/23 Analyzed: 12/20/23						
Perfluoroheptanesulfonic acid (PFHpS)	8.79	1.9	ng/L	9.08		96.7	69-134			
N-EtFOSAA (NEtFOSAA)	10.0	1.9	ng/L	9.51		106	61-135			
N-MeFOSAA (NMeFOSAA)	10.0	1.9	ng/L	9.51		105	65-136			
Perfluorotetradecanoic acid (PFTA)	9.40	1.9	ng/L	9.51		98.8	71-132			
Perfluorotridecanoic acid (PFTrDA)	9.19	1.9	ng/L	9.51		96.6	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.93	1.9	ng/L	8.89		89.1	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.47	1.9	ng/L	9.18		81.4	53-142			
Perfluorooctanesulfonamide (FOSA)	9.20	1.9	ng/L	9.51		96.7	67-137			
Perfluorononanesulfonic acid (PFNS)	7.89	1.9	ng/L	9.13		86.4	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	6.84	1.9	ng/L	9.51		71.9	50-150			
Perfluoro-1-butanesulfonamide (FBSA)	7.06	1.9	ng/L	9.51		74.3	50-150			
Perfluorohexanesulfonic acid (PFHxS)	8.18	1.9	ng/L	8.70		93.9	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	9.61	1.9	ng/L	9.51		101	53.8-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.0	1.9	ng/L	9.51		105	54.5-152			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.06	1.9	ng/L	9.04		100	64-140			
Perfluoropentanesulfonic acid (PFPeS)	7.84	1.9	ng/L	8.94		87.6	71-127			
Perfluoroundecanoic acid (PFUnA)	9.30	1.9	ng/L	9.51		97.7	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	8.07	1.9	ng/L	9.51		84.9	50.5-159			
Perfluoroheptanoic acid (PFHpA)	8.96	1.9	ng/L	9.51		94.2	72-130			
Perfluorooctanoic acid (PFOA)	8.97	1.9	ng/L	9.51		94.3	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.47	1.9	ng/L	8.80		96.2	65-140			
Perfluorononanoic acid (PFNA)	9.25	1.9	ng/L	9.51		97.2	69-130			
LCS Dup (B361025-BSD1)				Prepared: 12/19/23 Analyzed: 12/20/23						
Perfluorobutanoic acid (PFBA)	8.18	1.9	ng/L	9.67		84.6	73-129	7.65	30	
Perfluorobutanesulfonic acid (PFBS)	6.97	1.9	ng/L	8.56		81.4	72-130	9.17	30	
Perfluoropentanoic acid (PFPeA)	8.31	1.9	ng/L	9.67		85.9	72-129	4.79	30	
Perfluorohexanoic acid (PFHxA)	7.97	1.9	ng/L	9.67		82.4	72-129	9.83	30	
11Cl-PF3OUdS (F53B Major)	7.62	1.9	ng/L	9.11		83.6	43.3-138	13.1	30	
9Cl-PF3ONS (F53B Minor)	8.22	1.9	ng/L	9.02		91.2	52-140	11.9	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.38	1.9	ng/L	9.11		81.0	53.7-152	9.80	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.47	1.9	ng/L	9.67		87.6	42.1-145	10.3	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.00	1.9	ng/L	9.29		86.2	67-138	4.82	30	
Perfluorodecanoic acid (PFDA)	9.02	1.9	ng/L	9.67		93.2	71-129	7.31	30	
Perfluorododecanoic acid (PFDoA)	8.99	1.9	ng/L	9.67		92.9	72-134	7.92	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	9.09	1.9	ng/L	8.61		106	52.7-147	7.37	30	
Perfluoroheptanesulfonic acid (PFHpS)	8.18	1.9	ng/L	9.24		88.6	69-134	7.12	30	
N-EtFOSAA (NEtFOSAA)	8.92	1.9	ng/L	9.67		92.2	61-135	11.9	30	
N-MeFOSAA (NMeFOSAA)	9.54	1.9	ng/L	9.67		98.6	65-136	4.76	30	
Perfluorotetradecanoic acid (PFTA)	8.52	1.9	ng/L	9.67		88.1	71-132	9.84	30	
Perfluorotridecanoic acid (PFTrDA)	8.60	1.9	ng/L	9.67		88.9	65-144	6.63	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.39	1.9	ng/L	9.05		81.7	63-143	7.07	30	
Perfluorodecanesulfonic acid (PFDS)	7.09	1.9	ng/L	9.34		75.9	53-142	5.24	30	
Perfluorooctanesulfonamide (FOSA)	8.41	1.9	ng/L	9.67		86.9	67-137	9.02	30	
Perfluorononanesulfonic acid (PFNS)	7.17	1.9	ng/L	9.29		77.2	69-127	9.66	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	5.85	1.9	ng/L	9.67		60.5	50-150	15.6	30	
Perfluoro-1-butanesulfonamide (FBSA)	6.09	1.9	ng/L	9.67		63.0	50-150	14.8	30	
Perfluorohexanesulfonic acid (PFHxS)	7.70	1.9	ng/L	8.85		87.0	68-131	5.95	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	9.01	1.9	ng/L	9.67		93.2	53.8-150	6.38	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	9.42	1.9	ng/L	9.67		97.4	54.5-152	6.14	30	

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B361025 - SOP 454-PFAAS										
LCS Dup (B361025-BSD1)				Prepared: 12/19/23 Analyzed: 12/20/23						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.57	1.9	ng/L	9.19		93.3	64-140	5.51	30	
Perfluoropentanesulfonic acid (PFPeS)	7.32	1.9	ng/L	9.09		80.5	71-127	6.76	30	
Perfluoroundecanoic acid (PFUnA)	8.57	1.9	ng/L	9.67		88.5	69-133	8.19	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	7.33	1.9	ng/L	9.67		75.8	50.5-159	9.65	30	
Perfluoroheptanoic acid (PFHpA)	8.35	1.9	ng/L	9.67		86.3	72-130	7.04	30	
Perfluorooctanoic acid (PFOA)	8.21	1.9	ng/L	9.67		84.9	71-133	8.82	30	
Perfluorooctanesulfonic acid (PFOS)	7.45	1.9	ng/L	8.95		83.3	65-140	12.7	30	
Perfluorononanoic acid (PFNA)	8.35	1.9	ng/L	9.67		86.3	69-130	10.2	30	
Batch B361067 - SOP 454-PFAAS										
Blank (B361067-BLK1)				Prepared: 12/27/23 Analyzed: 12/28/23						
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L							

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B361067 - SOP 454-PFAAS											
LCS (B361067-BS1)				Prepared: 12/27/23 Analyzed: 12/28/23							
Perfluorobutanoic acid (PFBA)	11.2	1.9	ng/L	9.26		121		73-129			
Perfluorobutanesulfonic acid (PFBS)	9.50	1.9	ng/L	8.19		116		72-130			
Perfluoropentanoic acid (PFPeA)	11.2	1.9	ng/L	9.26		121		72-129			
Perfluorohexanoic acid (PFHxA)	11.2	1.9	ng/L	9.26		121		72-129			
11Cl-PF3OUdS (F53B Major)	8.67	1.9	ng/L	8.72		99.4		43.3-138			
9Cl-PF3ONS (F53B Minor)	9.00	1.9	ng/L	8.63		104		52-140			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.97	1.9	ng/L	8.72		103		53.7-152			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	10.9	1.9	ng/L	9.26		117		42.1-145			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11.1	1.9	ng/L	8.89		125		67-138			
Perfluorodecanoic acid (PFDA)	10.9	1.9	ng/L	9.26		118		71-129			
Perfluorododecanoic acid (PFDoA)	10.7	1.9	ng/L	9.26		115		72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	10.5	1.9	ng/L	8.24		127		52.7-147			
Perfluoroheptanesulfonic acid (PFHpS)	10.7	1.9	ng/L	8.84		122		69-134			
N-EtFOSAA (NEtFOSAA)	11.3	1.9	ng/L	9.26		122		61-135			
N-MeFOSAA (NMeFOSAA)	13.5	1.9	ng/L	9.26		**146**	*	65-136			L-02
Perfluorotetradecanoic acid (PFTA)	10.0	1.9	ng/L	9.26		108		71-132			
Perfluorotridecanoic acid (PFTrDA)	10.3	1.9	ng/L	9.26		112		65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.2	1.9	ng/L	8.65		117		63-143			
Perfluorodecanesulfonic acid (PFDS)	9.17	1.9	ng/L	8.93		103		53-142			
Perfluorooctanesulfonamide (FOSA)	11.3	1.9	ng/L	9.26		122		67-137			
Perfluorononanesulfonic acid (PFNS)	8.77	1.9	ng/L	8.89		98.7		69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	10.1	1.9	ng/L	9.26		109		50-150			
Perfluoro-1-butanesulfonamide (FBSA)	10.3	1.9	ng/L	9.26		111		50-150			
Perfluorohexanesulfonic acid (PFHxS)	9.64	1.9	ng/L	8.47		114		68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.4	1.9	ng/L	9.26		112		53.8-150			
Perfluoro-5-oxahexanoic acid (PFMBA)	11.0	1.9	ng/L	9.26		119		54.5-152			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	11.8	1.9	ng/L	8.79		134		64-140			
Perfluoropentanesulfonic acid (PFPeS)	10.8	1.9	ng/L	8.70		124		71-127			
Perfluoroundecanoic acid (PFUnA)	11.2	1.9	ng/L	9.26		122		69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.62	1.9	ng/L	9.26		104		50.5-159			
Perfluoroheptanoic acid (PFHpA)	10.4	1.9	ng/L	9.26		112		72-130			
Perfluorooctanoic acid (PFOA)	11.2	1.9	ng/L	9.26		121		71-133			
Perfluorooctanesulfonic acid (PFOS)	10.4	1.9	ng/L	8.56		122		65-140			
Perfluorononanoic acid (PFNA)	11.3	1.9	ng/L	9.26		123		69-130			
LCS Dup (B361067-BSD1)				Prepared: 12/27/23 Analyzed: 12/28/23							
Perfluorobutanoic acid (PFBA)	11.3	1.8	ng/L	9.12		123		73-129	0.751	30	
Perfluorobutanesulfonic acid (PFBS)	9.95	1.8	ng/L	8.07		123		72-130	4.62	30	
Perfluoropentanoic acid (PFPeA)	11.5	1.8	ng/L	9.12		126		72-129	2.72	30	
Perfluorohexanoic acid (PFHxA)	11.8	1.8	ng/L	9.12		129		72-129	5.58	30	
11Cl-PF3OUdS (F53B Major)	10.1	1.8	ng/L	8.59		118		43.3-138	15.4	30	
9Cl-PF3ONS (F53B Minor)	10.4	1.8	ng/L	8.50		123		52-140	14.9	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.57	1.8	ng/L	8.59		99.8		53.7-152	4.54	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.68	1.8	ng/L	9.12		106		42.1-145	11.4	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11.7	1.8	ng/L	8.76		133		67-138	5.04	30	
Perfluorodecanoic acid (PFDA)	11.6	1.8	ng/L	9.12		127		71-129	6.05	30	
Perfluorododecanoic acid (PFDoA)	11.2	1.8	ng/L	9.12		122		72-134	4.36	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	10.7	1.8	ng/L	8.12		131		52.7-147	1.47	30	

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B361067 - SOP 454-PFAAS											
LCS Dup (B361067-BSD1)				Prepared: 12/27/23 Analyzed: 12/28/23							
Perfluoroheptanesulfonic acid (PFHpS)	11.6	1.8	ng/L	8.71		133		69-134	7.28	30	
N-EtFOSAA (NEtFOSAA)	13.3	1.8	ng/L	9.12		**146**	*	61-135	16.5	30	L-01
N-MeFOSAA (NMeFOSAA)	13.7	1.8	ng/L	9.12		**150**	*	65-136	1.33	30	L-02
Perfluorotetradecanoic acid (PFTA)	10.3	1.8	ng/L	9.12		113		71-132	2.55	30	
Perfluorotridecanoic acid (PFTrDA)	10.8	1.8	ng/L	9.12		119		65-144	4.64	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.5	1.8	ng/L	8.53		123		63-143	3.20	30	
Perfluorodecanesulfonic acid (PFDS)	9.87	1.8	ng/L	8.80		112		53-142	7.34	30	
Perfluorooctanesulfonamide (FOSA)	10.8	1.8	ng/L	9.12		118		67-137	4.06	30	
Perfluorononanesulfonic acid (PFNS)	11.7	1.8	ng/L	8.76		**133**	*	69-127	28.3	30	L-01
Perfluoro-1-hexanesulfonamide (FHxSA)	10.1	1.8	ng/L	9.12		111		50-150	0.539	30	
Perfluoro-1-butanesulfonamide (FBSA)	10.7	1.8	ng/L	9.12		117		50-150	3.39	30	
Perfluorohexanesulfonic acid (PFHxS)	10.2	1.8	ng/L	8.34		122		68-131	5.58	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	10.6	1.8	ng/L	9.12		116		53.8-150	2.59	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	11.1	1.8	ng/L	9.12		122		54.5-152	0.592	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	11.9	1.8	ng/L	8.66		137		64-140	0.348	30	
Perfluoropentanesulfonic acid (PFPeS)	10.8	1.8	ng/L	8.57		126		71-127	0.180	30	
Perfluoroundecanoic acid (PFUnA)	11.3	1.8	ng/L	9.12		124		69-133	0.793	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.1	1.8	ng/L	9.12		110		50.5-159	4.48	30	
Perfluoroheptanoic acid (PFHpA)	10.5	1.8	ng/L	9.12		115		72-130	0.460	30	
Perfluorooctanoic acid (PFOA)	12.1	1.8	ng/L	9.12		132		71-133	7.33	30	
Perfluorooctanesulfonic acid (PFOS)	10.9	1.8	ng/L	8.44		129		65-140	4.36	30	
Perfluorononanoic acid (PFNA)	11.1	1.8	ng/L	9.12		122		69-130	2.13	30	

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
L-02	Laboratory fortified blank/laboratory control sample recovery and duplicate recoveries outside of control limits. Data validation is not affected since all results are "not detected" for associated samples in this batch and bias is on the high side.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-19	Sample re-analyzed at a dilution that was re-fortified with internal standard.
S-29	Extracted Internal Standard is outside of control limits.

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-I(S) (23L1211-01)			Lab File ID: 23L1211-01.d			Analyzed: 12/20/23 14:23			
M8FOSA	463270.2	3.9566	821,977.00	3.9566	56	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	62904.53	2.4804	228,021.00	2.496817	28	50 - 150	-0.0164	+/-0.50	*
M2PFTA	1326524	4.321567	2,190,084.00	4.329683	61	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	291426.9	3.786867	426,189.00	3.794833	68	50 - 150	-0.0080	+/-0.50	
MPFBA	536763.8	1.075083	866,915.00	1.075083	62	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	185366.1	2.81475	218,004.00	2.8393	85	50 - 150	-0.0246	+/-0.50	
M6PFDA	1275743	3.79535	1,844,299.00	3.79535	69	50 - 150	0.0000	+/-0.50	
M3PFBS	257195.2	1.878383	329,840.00	1.894967	78	50 - 150	-0.0166	+/-0.50	
M7PFUnA	1113566	3.93805	1,701,532.00	3.946033	65	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	991021.9	3.429317	170,229.00	3.429317	582	50 - 150	0.0000	+/-0.50	*
M5PFPeA	532536.8	1.7231	770,284.00	1.7231	69	50 - 150	0.0000	+/-0.50	
M5PFHxA	953714.5	2.564133	1,324,533.00	2.58055	72	50 - 150	-0.0164	+/-0.50	
M3PFHxS	150736.7	3.193817	192,516.00	3.193817	78	50 - 150	0.0000	+/-0.50	
M4PFHpA	948504.4	3.1627	1,285,304.00	3.1627	74	50 - 150	0.0000	+/-0.50	
M8PFOA	962814.5	3.437833	1,450,100.00	3.445833	66	50 - 150	-0.0080	+/-0.50	
M8PFOS	168148.9	3.636183	228,157.00	3.636183	74	50 - 150	0.0000	+/-0.50	
M9PFNA	997513.9	3.637217	1,403,264.00	3.637217	71	50 - 150	0.0000	+/-0.50	
MPFDoA	905054.6	4.08065	1,494,566.00	4.08065	61	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	189473.8	3.945517	339,024.00	3.945517	56	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	210223.7	3.873767	419,564.00	3.873767	50	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-I(M) (23L1211-02)			Lab File ID: 23L1211-02.d			Analyzed: 12/20/23 14:31			
M8FOSA	464249.3	3.9566	821,977.00	3.9566	56	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	62173.49	2.4804	228,021.00	2.496817	27	50 - 150	-0.0164	+/-0.50	*
M2PFTA	1251582	4.32155	2,190,084.00	4.329683	57	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	281420.1	3.786867	426,189.00	3.794833	66	50 - 150	-0.0080	+/-0.50	
MPFBA	519207.3	1.075083	866,915.00	1.075083	60	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	165138.8	2.81475	218,004.00	2.8393	76	50 - 150	-0.0246	+/-0.50	
M6PFDA	1190799	3.787383	1,844,299.00	3.79535	65	50 - 150	-0.0080	+/-0.50	
M3PFBS	229097.9	1.878383	329,840.00	1.894967	69	50 - 150	-0.0166	+/-0.50	
M7PFUnA	1129378	3.93805	1,701,532.00	3.946033	66	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	72206.48	3.4293	170,229.00	3.429317	42	50 - 150	0.0000	+/-0.50	*
M5PFPeA	514616.3	1.714833	770,284.00	1.7231	67	50 - 150	-0.0083	+/-0.50	
M5PFHxA	890184.9	2.555917	1,324,533.00	2.58055	67	50 - 150	-0.0246	+/-0.50	
M3PFHxS	139954.4	3.185733	192,516.00	3.193817	73	50 - 150	-0.0081	+/-0.50	
M4PFHpA	886071.4	3.154633	1,285,304.00	3.1627	69	50 - 150	-0.0081	+/-0.50	
M8PFOA	1018299	3.437833	1,450,100.00	3.445833	70	50 - 150	-0.0080	+/-0.50	
M8PFOS	154740.4	3.6282	228,157.00	3.636183	68	50 - 150	-0.0080	+/-0.50	
M9PFNA	993050.7	3.629233	1,403,264.00	3.637217	71	50 - 150	-0.0080	+/-0.50	
MPFDoA	893333.9	4.08065	1,494,566.00	4.08065	60	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	187411.1	3.937517	339,024.00	3.945517	55	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	221842.7	3.865617	419,564.00	3.873767	53	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-I(D) (23L1211-03)			Lab File ID: 23L1211-03.d			Analyzed: 12/20/23 15:07			
M8FOSA	462277.7	3.9566	821,977.00	3.9566	56	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	60904.13	2.496817	228,021.00	2.4886	27	50 - 150	0.0082	+/-0.50	*
M2PFTA	1188155	4.32155	2,190,084.00	4.32155	54	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	228856.4	3.786867	426,189.00	3.786867	54	50 - 150	0.0000	+/-0.50	
MPFBA	517497.3	1.075083	866,915.00	1.075083	60	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	189752.8	2.831117	218,004.00	2.822933	87	50 - 150	0.0082	+/-0.50	
M6PFDA	1225098	3.79535	1,844,299.00	3.79535	66	50 - 150	0.0000	+/-0.50	
M3PFBS	255724.9	1.894967	329,840.00	1.886683	78	50 - 150	0.0083	+/-0.50	
M7PFUnA	891763	3.938033	1,701,532.00	3.93805	52	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	77468.52	3.4293	170,229.00	3.4293	46	50 - 150	0.0000	+/-0.50	*
M5PFPeA	551952.7	1.731383	770,284.00	1.7231	72	50 - 150	0.0083	+/-0.50	
M5PFHxA	966177.1	2.58055	1,324,533.00	2.572333	73	50 - 150	0.0082	+/-0.50	
M3PFHxS	150190.8	3.193817	192,516.00	3.193817	78	50 - 150	0.0000	+/-0.50	
M4PFHpA	967674.6	3.1627	1,285,304.00	3.1627	75	50 - 150	0.0000	+/-0.50	
M8PFOA	1104364	3.445833	1,450,100.00	3.437833	76	50 - 150	0.0080	+/-0.50	
M8PFOS	169840.1	3.636183	228,157.00	3.636183	74	50 - 150	0.0000	+/-0.50	
M9PFNA	1033511	3.637217	1,403,264.00	3.637217	74	50 - 150	0.0000	+/-0.50	
MPFDoA	855756.1	4.08065	1,494,566.00	4.08065	57	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	150711.5	3.945517	339,024.00	3.945517	44	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	201933.6	3.865617	419,564.00	3.865617	48	50 - 150	0.0000	+/-0.50	*

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-P(S) (23L1211-04)			Lab File ID: 23L1211-04.d			Analyzed: 12/20/23 15:14			
M8FOSA	509573.8	3.9566	821,977.00	3.9566	62	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	66231.33	2.4886	228,021.00	2.4886	29	50 - 150	0.0000	+/-0.50	*
M2PFTA	1342759	4.32155	2,190,084.00	4.32155	61	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	314348	3.78685	426,189.00	3.786867	74	50 - 150	0.0000	+/-0.50	
MPFBA	575390.1	1.075083	866,915.00	1.075083	66	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	167277.5	2.831117	218,004.00	2.822933	77	50 - 150	0.0082	+/-0.50	
M6PFDA	1403788	3.79535	1,844,299.00	3.79535	76	50 - 150	0.0000	+/-0.50	
M3PFBS	263766.9	1.886667	329,840.00	1.886683	80	50 - 150	0.0000	+/-0.50	
M7PFUnA	1062980	3.938033	1,701,532.00	3.93805	62	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	85348.72	3.4293	170,229.00	3.4293	50	50 - 150	0.0000	+/-0.50	
M5PFPeA	568175.6	1.7231	770,284.00	1.7231	74	50 - 150	0.0000	+/-0.50	
M5PFHxA	976009.8	2.572333	1,324,533.00	2.572333	74	50 - 150	0.0000	+/-0.50	
M3PFHxS	155146.5	3.193817	192,516.00	3.193817	81	50 - 150	0.0000	+/-0.50	
M4PFHpA	981997.8	3.1627	1,285,304.00	3.1627	76	50 - 150	0.0000	+/-0.50	
M8PFOA	1115158	3.445833	1,450,100.00	3.437833	77	50 - 150	0.0080	+/-0.50	
M8PFOS	179229.1	3.636183	228,157.00	3.636183	79	50 - 150	0.0000	+/-0.50	
M9PFNA	1078889	3.637217	1,403,264.00	3.637217	77	50 - 150	0.0000	+/-0.50	
MPFDoA	924448.1	4.08065	1,494,566.00	4.08065	62	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	203626.7	3.945517	339,024.00	3.945517	60	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	273685.7	3.865617	419,564.00	3.865617	65	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-P(M) (23L1211-05)			Lab File ID: 23L1211-05.d			Analyzed: 12/20/23 15:22			
M8FOSA	411943.3	3.9566	821,977.00	3.9566	50	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	67788.56	2.4886	228,021.00	2.4886	30	50 - 150	0.0000	+/-0.50	*
M2PFTA	1240170	4.32155	2,190,084.00	4.32155	57	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	287215.1	3.786867	426,189.00	3.786867	67	50 - 150	0.0000	+/-0.50	
MPFBA	519686.1	1.075083	866,915.00	1.075083	60	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	194448.2	2.822933	218,004.00	2.822933	89	50 - 150	0.0000	+/-0.50	
M6PFDA	1282929	3.787383	1,844,299.00	3.79535	70	50 - 150	-0.0080	+/-0.50	
M3PFBS	250397	1.886683	329,840.00	1.886683	76	50 - 150	0.0000	+/-0.50	
M7PFUnA	1221857	3.938033	1,701,532.00	3.93805	72	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	100662.7	3.429317	170,229.00	3.4293	59	50 - 150	0.0000	+/-0.50	
M5PFPeA	547576.1	1.7231	770,284.00	1.7231	71	50 - 150	0.0000	+/-0.50	
M5PFHxA	946278.3	2.572333	1,324,533.00	2.572333	71	50 - 150	0.0000	+/-0.50	
M3PFHxS	142625.1	3.193817	192,516.00	3.193817	74	50 - 150	0.0000	+/-0.50	
M4PFHpA	937358.5	3.1627	1,285,304.00	3.1627	73	50 - 150	0.0000	+/-0.50	
M8PFOA	1099577	3.437833	1,450,100.00	3.437833	76	50 - 150	0.0000	+/-0.50	
M8PFOS	175072.7	3.636183	228,157.00	3.636183	77	50 - 150	0.0000	+/-0.50	
M9PFNA	1072001	3.637217	1,403,264.00	3.637217	76	50 - 150	0.0000	+/-0.50	
MPFDoA	882426.8	4.08065	1,494,566.00	4.08065	59	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	182447.8	3.945517	339,024.00	3.945517	54	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	239943.2	3.865617	419,564.00	3.865617	57	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-3 (23L1211-06)			Lab File ID: 23L1211-06.d			Analyzed: 12/20/23 15:29			
M8FOSA	472977.6	3.9566	821,977.00	3.9566	58	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	75876.34	2.4886	228,021.00	2.4886	33	50 - 150	0.0000	+/-0.50	*
M2PFTA	1204922	4.32155	2,190,084.00	4.32155	55	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	267703.3	3.786867	426,189.00	3.786867	63	50 - 150	0.0000	+/-0.50	
MPFBA	453977.4	1.075083	866,915.00	1.075083	52	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	181011	2.822933	218,004.00	2.822933	83	50 - 150	0.0000	+/-0.50	
M6PFDA	1255178	3.79535	1,844,299.00	3.79535	68	50 - 150	0.0000	+/-0.50	
M3PFBS	250711.2	1.886683	329,840.00	1.886683	76	50 - 150	0.0000	+/-0.50	
M7PFUnA	996653.7	3.93805	1,701,532.00	3.93805	59	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	124645.5	3.429317	170,229.00	3.4293	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	530864.4	1.7231	770,284.00	1.7231	69	50 - 150	0.0000	+/-0.50	
M5PFHxA	931596.9	2.572333	1,324,533.00	2.572333	70	50 - 150	0.0000	+/-0.50	
M3PFHxS	145464.4	3.193817	192,516.00	3.193817	76	50 - 150	0.0000	+/-0.50	
M4PFHpA	935062.1	3.1627	1,285,304.00	3.1627	73	50 - 150	0.0000	+/-0.50	
M8PFOA	1053201	3.437833	1,450,100.00	3.437833	73	50 - 150	0.0000	+/-0.50	
M8PFOS	171706.3	3.636183	228,157.00	3.636183	75	50 - 150	0.0000	+/-0.50	
M9PFNA	1001043	3.637217	1,403,264.00	3.637217	71	50 - 150	0.0000	+/-0.50	
MPFDoA	858206.8	4.08065	1,494,566.00	4.08065	57	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	192552.1	3.945517	339,024.00	3.945517	57	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	246428.8	3.865617	419,564.00	3.865617	59	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-302 (23L1211-07)			Lab File ID: 23L1211-07.d			Analyzed: 12/20/23 15:36			
M8FOSA	449284.4	3.9566	821,977.00	3.9566	55	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	54681.99	2.496817	228,021.00	2.4886	24	50 - 150	0.0082	+/-0.50	*
M2PFTA	1061947	4.32155	2,190,084.00	4.32155	48	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	198172.1	3.786867	426,189.00	3.786867	46	50 - 150	0.0000	+/-0.50	*
MPFBA	583669.1	1.075083	866,915.00	1.075083	67	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	178422.5	2.831117	218,004.00	2.822933	82	50 - 150	0.0082	+/-0.50	
M6PFDA	1151847	3.79535	1,844,299.00	3.79535	62	50 - 150	0.0000	+/-0.50	
M3PFBS	254547.7	1.886667	329,840.00	1.886683	77	50 - 150	0.0000	+/-0.50	
M7PFUnA	800728.9	3.938033	1,701,532.00	3.93805	47	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	74254.66	3.4293	170,229.00	3.4293	44	50 - 150	0.0000	+/-0.50	*
M5PFPeA	562580.6	1.7231	770,284.00	1.7231	73	50 - 150	0.0000	+/-0.50	
M5PFHxA	965793.8	2.58055	1,324,533.00	2.572333	73	50 - 150	0.0082	+/-0.50	
M3PFHxS	153697.5	3.193817	192,516.00	3.193817	80	50 - 150	0.0000	+/-0.50	
M4PFHpA	974684.1	3.1627	1,285,304.00	3.1627	76	50 - 150	0.0000	+/-0.50	
M8PFOA	1076678	3.445833	1,450,100.00	3.437833	74	50 - 150	0.0080	+/-0.50	
M8PFOS	157981.7	3.636183	228,157.00	3.636183	69	50 - 150	0.0000	+/-0.50	
M9PFNA	1002055	3.637217	1,403,264.00	3.637217	71	50 - 150	0.0000	+/-0.50	
MPFDoA	655959.2	4.08065	1,494,566.00	4.08065	44	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	122594	3.945517	339,024.00	3.945517	36	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	167463.5	3.865617	419,564.00	3.865617	40	50 - 150	0.0000	+/-0.50	*

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW--S(S) (23L1211-08)			Lab File ID: 23L1211-08.d			Analyzed: 12/20/23 15:43			
M8FOSA	420042.5	3.9566	821,977.00	3.9566	51	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	54832.82	2.496817	228,021.00	2.4886	24	50 - 150	0.0082	+/-0.50	*
M2PFTA	1064026	4.32155	2,190,084.00	4.32155	49	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	217749.7	3.786867	426,189.00	3.786867	51	50 - 150	0.0000	+/-0.50	
MPFBA	511187.4	1.075083	866,915.00	1.075083	59	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	184491.7	2.822933	218,004.00	2.822933	85	50 - 150	0.0000	+/-0.50	
M6PFDA	1194872	3.787383	1,844,299.00	3.79535	65	50 - 150	-0.0080	+/-0.50	
M3PFBS	253028.1	1.886683	329,840.00	1.886683	77	50 - 150	0.0000	+/-0.50	
M7PFUnA	957013.4	3.93805	1,701,532.00	3.93805	56	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	718948.9	3.429317	170,229.00	3.4293	422	50 - 150	0.0000	+/-0.50	*
M5PFPeA	523406.1	1.7231	770,284.00	1.7231	68	50 - 150	0.0000	+/-0.50	
M5PFHxA	926596.9	2.572333	1,324,533.00	2.572333	70	50 - 150	0.0000	+/-0.50	
M3PFHxS	145386.7	3.193817	192,516.00	3.193817	76	50 - 150	0.0000	+/-0.50	
M4PFHpA	915287.3	3.1627	1,285,304.00	3.1627	71	50 - 150	0.0000	+/-0.50	
M8PFOA	949649.6	3.437833	1,450,100.00	3.437833	65	50 - 150	0.0000	+/-0.50	
M8PFOS	158663.3	3.636183	228,157.00	3.636183	70	50 - 150	0.0000	+/-0.50	
M9PFNA	931227.8	3.637217	1,403,264.00	3.637217	66	50 - 150	0.0000	+/-0.50	
MPFDoA	805107.4	4.08065	1,494,566.00	4.08065	54	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	131276.1	3.945517	339,024.00	3.945517	39	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	157168.3	3.865617	419,564.00	3.865617	37	50 - 150	0.0000	+/-0.50	*
HW--S(S) (23L1211-08RE1)			Lab File ID: 23L1211-08RE1.d			Analyzed: 12/21/23 13:45			
M5PFPeA	655666.7	1.757717	851,514.00	1.757717	77	50 - 150	0.0000	+/-0.50	
M8PFOS	225406.1	3.636183	295,085.00	3.636183	76	50 - 150	0.0000	+/-0.50	
HW--S(S) (23L1211-08RE2)			Lab File ID: 23L1211-08RE2.d			Analyzed: 12/21/23 14:44			
M2-6:2FTS	121604.8	3.445283	155,055.00	3.445283	78	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW--S(M) (23L1211-09)			Lab File ID: 23L1211-09.d			Analyzed: 12/20/23 15:51			
M8FOSA	433014.2	3.9566	821,977.00	3.9566	53	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	63356.71	2.4886	228,021.00	2.4886	28	50 - 150	0.0000	+/-0.50	*
M2PFTA	1117269	4.32155	2,190,084.00	4.32155	51	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	235288.6	3.78685	426,189.00	3.786867	55	50 - 150	0.0000	+/-0.50	
MPFBA	542559.1	1.075083	866,915.00	1.075083	63	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	182660	2.822933	218,004.00	2.822933	84	50 - 150	0.0000	+/-0.50	
M6PFDA	1140514	3.79535	1,844,299.00	3.79535	62	50 - 150	0.0000	+/-0.50	
M3PFBS	219247.7	1.886667	329,840.00	1.886683	66	50 - 150	0.0000	+/-0.50	
M7PFUnA	998922.2	3.938033	1,701,532.00	3.93805	59	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	72610.51	3.4293	170,229.00	3.4293	43	50 - 150	0.0000	+/-0.50	*
M5PFPeA	522252.4	1.7231	770,284.00	1.7231	68	50 - 150	0.0000	+/-0.50	
M5PFHxA	861863.6	2.572333	1,324,533.00	2.572333	65	50 - 150	0.0000	+/-0.50	
M3PFHxS	124475.7	3.193817	192,516.00	3.193817	65	50 - 150	0.0000	+/-0.50	
M4PFHpA	851350.1	3.1627	1,285,304.00	3.1627	66	50 - 150	0.0000	+/-0.50	
M8PFOA	941892.6	3.437833	1,450,100.00	3.437833	65	50 - 150	0.0000	+/-0.50	
M8PFOS	146634.2	3.636183	228,157.00	3.636183	64	50 - 150	0.0000	+/-0.50	
M9PFNA	860693.1	3.637217	1,403,264.00	3.637217	61	50 - 150	0.0000	+/-0.50	
MPFDoA	822533.6	4.08065	1,494,566.00	4.08065	55	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	154953.4	3.945517	339,024.00	3.945517	46	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	179618.4	3.873767	419,564.00	3.865617	43	50 - 150	0.0082	+/-0.50	*

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-1 (23L1211-10)			Lab File ID: 23L1211-10.d			Analyzed: 12/20/23 15:58			
M8FOSA	427133.9	3.9566	821,977.00	3.9566	52	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	54895.25	2.4886	228,021.00	2.4886	24	50 - 150	0.0000	+/-0.50	*
M2PFTA	1137290	4.32155	2,190,084.00	4.32155	52	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	206108.3	3.786867	426,189.00	3.786867	48	50 - 150	0.0000	+/-0.50	*
MPFBA	544624.4	1.075083	866,915.00	1.075083	63	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	212588.5	2.831117	218,004.00	2.822933	98	50 - 150	0.0082	+/-0.50	
M6PFDA	1209469	3.79535	1,844,299.00	3.79535	66	50 - 150	0.0000	+/-0.50	
M3PFBS	267435.5	1.886667	329,840.00	1.886683	81	50 - 150	0.0000	+/-0.50	
M7PFUnA	816585.1	3.93805	1,701,532.00	3.93805	48	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	78333.41	3.429317	170,229.00	3.4293	46	50 - 150	0.0000	+/-0.50	*
M5PFPeA	559957.8	1.7231	770,284.00	1.7231	73	50 - 150	0.0000	+/-0.50	
M5PFHxA	993301.9	2.58055	1,324,533.00	2.572333	75	50 - 150	0.0082	+/-0.50	
M3PFHxS	153331.2	3.193817	192,516.00	3.193817	80	50 - 150	0.0000	+/-0.50	
M4PFHpA	994327.5	3.1627	1,285,304.00	3.1627	77	50 - 150	0.0000	+/-0.50	
M8PFOA	1171672	3.445833	1,450,100.00	3.437833	81	50 - 150	0.0080	+/-0.50	
M8PFOS	161827.5	3.636183	228,157.00	3.636183	71	50 - 150	0.0000	+/-0.50	
M9PFNA	1034256	3.637217	1,403,264.00	3.637217	74	50 - 150	0.0000	+/-0.50	
MPFDoA	688761.8	4.08065	1,494,566.00	4.08065	46	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	143512.7	3.945517	339,024.00	3.945517	42	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	186319.1	3.865617	419,564.00	3.865617	44	50 - 150	0.0000	+/-0.50	*

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-2 (23L1211-11)			Lab File ID: 23L1211-11.d			Analyzed: 12/20/23 16:05			
M8FOSA	490380	3.9566	821,977.00	3.9566	60	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	56782.08	2.4886	228,021.00	2.4886	25	50 - 150	0.0000	+/-0.50	*
M2PFTA	1355333	4.32155	2,190,084.00	4.32155	62	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	227222	3.786867	426,189.00	3.786867	53	50 - 150	0.0000	+/-0.50	
MPFBA	560998.1	1.075083	866,915.00	1.075083	65	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	190025.4	2.831117	218,004.00	2.822933	87	50 - 150	0.0082	+/-0.50	
M6PFDA	1418127	3.79535	1,844,299.00	3.79535	77	50 - 150	0.0000	+/-0.50	
M3PFBS	272403.2	1.886667	329,840.00	1.886683	83	50 - 150	0.0000	+/-0.50	
M7PFUnA	1024300	3.93805	1,701,532.00	3.93805	60	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	90094.32	3.429317	170,229.00	3.4293	53	50 - 150	0.0000	+/-0.50	
M5PFPeA	582025.6	1.7231	770,284.00	1.7231	76	50 - 150	0.0000	+/-0.50	
M5PFHxA	1024335	2.58055	1,324,533.00	2.572333	77	50 - 150	0.0082	+/-0.50	
M3PFHxS	156808.8	3.193817	192,516.00	3.193817	81	50 - 150	0.0000	+/-0.50	
M4PFHpA	1008153	3.1627	1,285,304.00	3.1627	78	50 - 150	0.0000	+/-0.50	
M8PFOA	1196874	3.445833	1,450,100.00	3.437833	83	50 - 150	0.0080	+/-0.50	
M8PFOS	174874.8	3.636183	228,157.00	3.636183	77	50 - 150	0.0000	+/-0.50	
M9PFNA	1073064	3.637217	1,403,264.00	3.637217	76	50 - 150	0.0000	+/-0.50	
MPFDoA	862743.3	4.08065	1,494,566.00	4.08065	58	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	200490.3	3.945517	339,024.00	3.945517	59	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	264670.4	3.865617	419,564.00	3.865617	63	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-3 (23L1211-12)			Lab File ID: 23L1211-12.d			Analyzed: 01/02/24 12:08			
M8FOSA	450414.8	4.00455	766,294.00	3.99655	59	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	92028.63	2.644867	256,494.00	2.644867	36	50 - 150	0.0000	+/-0.50	*
M2PFTA	1185256	4.362167	2,101,978.00	4.362167	56	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	95473.79	3.82705	209,493.00	3.82705	46	50 - 150	0.0000	+/-0.50	*
MPFBA	518848.9	1.100017	884,750.00	1.0917	59	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	210075.3	2.937833	276,915.00	2.937833	76	50 - 150	0.0000	+/-0.50	
M6PFDA	901650.9	3.82755	1,372,130.00	3.82755	66	50 - 150	0.0000	+/-0.50	
M3PFBS	262579.8	2.011067	372,281.00	2.011067	71	50 - 150	0.0000	+/-0.50	
M7PFUnA	989501.6	3.978	1,689,139.00	3.978	59	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	119701.5	3.469383	174,608.00	3.477367	69	50 - 150	-0.0080	+/-0.50	
M5PFPeA	538465.1	1.824517	803,514.00	1.816233	67	50 - 150	0.0083	+/-0.50	
M5PFHxA	975605.3	2.730867	1,443,773.00	2.730867	68	50 - 150	0.0000	+/-0.50	
M3PFHxS	166842.1	3.250667	231,194.00	3.250667	72	50 - 150	0.0000	+/-0.50	
M4PFHpA	1000295	3.227617	1,481,981.00	3.227617	67	50 - 150	0.0000	+/-0.50	
M8PFOA	1099237	3.485883	1,525,826.00	3.485883	72	50 - 150	0.0000	+/-0.50	
M8PFOS	164137.2	3.668117	243,805.00	3.668117	67	50 - 150	0.0000	+/-0.50	
M9PFNA	998280.8	3.66915	1,341,664.00	3.66915	74	50 - 150	0.0000	+/-0.50	
MPFDoA	968659.9	4.120767	1,700,937.00	4.120767	57	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	231634.1	3.985467	413,957.00	3.985467	56	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	255231.5	3.9059	494,834.00	3.9059	52	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B361025-BLK1)			Lab File ID: B361025-BLK1.d			Analyzed: 12/20/23 13:33			
M8FOSA	628576.7	3.964583	821,977.00	3.9566	76	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	190048.4	2.505033	228,021.00	2.496817	83	50 - 150	0.0082	+/-0.50	
M2PFTA	1611991	4.329683	2,190,084.00	4.329683	74	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	457246	3.794833	426,189.00	3.794833	107	50 - 150	0.0000	+/-0.50	
MPFBA	674140.7	1.075083	866,915.00	1.075083	78	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	202862.1	2.831117	218,004.00	2.8393	93	50 - 150	-0.0082	+/-0.50	
M6PFDA	1519480	3.79535	1,844,299.00	3.79535	82	50 - 150	0.0000	+/-0.50	
M3PFBS	274348.3	1.894967	329,840.00	1.894967	83	50 - 150	0.0000	+/-0.50	
M7PFUnA	1279714	3.946033	1,701,532.00	3.946033	75	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	157058.5	3.4373	170,229.00	3.429317	92	50 - 150	0.0080	+/-0.50	
M5PFPeA	624570.2	1.731383	770,284.00	1.7231	81	50 - 150	0.0083	+/-0.50	
M5PFHxA	1088003	2.588767	1,324,533.00	2.58055	82	50 - 150	0.0082	+/-0.50	
M3PFHxS	169760	3.201883	192,516.00	3.193817	88	50 - 150	0.0081	+/-0.50	
M4PFHpA	1113443	3.170783	1,285,304.00	3.1627	87	50 - 150	0.0081	+/-0.50	
M8PFOA	1315735	3.445833	1,450,100.00	3.445833	91	50 - 150	0.0000	+/-0.50	
M8PFOS	190868.2	3.636183	228,157.00	3.636183	84	50 - 150	0.0000	+/-0.50	
M9PFNA	1264270	3.637217	1,403,264.00	3.637217	90	50 - 150	0.0000	+/-0.50	
MPFDoA	1109098	4.08865	1,494,566.00	4.08065	74	50 - 150	0.0080	+/-0.50	
D5-NEtFOSAA	260160.9	3.9535	339,024.00	3.945517	77	50 - 150	0.0080	+/-0.50	
D3-NMeFOSAA	358518.7	3.873767	419,564.00	3.873767	85	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B361025-BS1)			Lab File ID: B361025-BS1.d			Analyzed: 12/20/23 13:18			
M8FOSA	639083.4	3.9566	821,977.00	3.9566	78	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	205118.6	2.496817	228,021.00	2.496817	90	50 - 150	0.0000	+/-0.50	
M2PFTA	1651785	4.32155	2,190,084.00	4.329683	75	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	536812.2	3.794833	426,189.00	3.794833	126	50 - 150	0.0000	+/-0.50	
MPFBA	725384.1	1.075083	866,915.00	1.075083	84	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	247274.2	2.831117	218,004.00	2.8393	113	50 - 150	-0.0082	+/-0.50	
M6PFDA	1596528	3.79535	1,844,299.00	3.79535	87	50 - 150	0.0000	+/-0.50	
M3PFBS	293228.3	1.886667	329,840.00	1.894967	89	50 - 150	-0.0083	+/-0.50	
M7PFUnA	1325192	3.93805	1,701,532.00	3.946033	78	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	165660.4	3.4293	170,229.00	3.429317	97	50 - 150	0.0000	+/-0.50	
M5PFPeA	668087.1	1.7231	770,284.00	1.7231	87	50 - 150	0.0000	+/-0.50	
M5PFHxA	1153284	2.58055	1,324,533.00	2.58055	87	50 - 150	0.0000	+/-0.50	
M3PFHxS	179742.9	3.193817	192,516.00	3.193817	93	50 - 150	0.0000	+/-0.50	
M4PFHpA	1160738	3.1627	1,285,304.00	3.1627	90	50 - 150	0.0000	+/-0.50	
M8PFOA	1348348	3.445833	1,450,100.00	3.445833	93	50 - 150	0.0000	+/-0.50	
M8PFOS	196466.4	3.636183	228,157.00	3.636183	86	50 - 150	0.0000	+/-0.50	
M9PFNA	1280663	3.637217	1,403,264.00	3.637217	91	50 - 150	0.0000	+/-0.50	
MPFDoA	1128930	4.08065	1,494,566.00	4.08065	76	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	280918.9	3.945517	339,024.00	3.945517	83	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	368520.5	3.865617	419,564.00	3.873767	88	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B361025-BSD1)			Lab File ID: B361025-BSD1.d			Analyzed: 12/20/23 13:26			
M8FOSA	665667.1	3.964583	821,977.00	3.9566	81	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	229504.7	2.505033	228,021.00	2.496817	101	50 - 150	0.0082	+/-0.50	
M2PFTA	1873515	4.329683	2,190,084.00	4.329683	86	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	573174.6	3.794833	426,189.00	3.794833	134	50 - 150	0.0000	+/-0.50	
MPFBA	758255.4	1.075083	866,915.00	1.075083	87	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	237271.7	2.8393	218,004.00	2.8393	109	50 - 150	0.0000	+/-0.50	
M6PFDA	1762897	3.79535	1,844,299.00	3.79535	96	50 - 150	0.0000	+/-0.50	
M3PFBS	329697.9	1.894967	329,840.00	1.894967	100	50 - 150	0.0000	+/-0.50	
M7PFUnA	1531161	3.946033	1,701,532.00	3.946033	90	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	188275.3	3.4373	170,229.00	3.429317	111	50 - 150	0.0080	+/-0.50	
M5PFPeA	706437.5	1.731383	770,284.00	1.7231	92	50 - 150	0.0083	+/-0.50	
M5PFHxA	1251322	2.588767	1,324,533.00	2.58055	94	50 - 150	0.0082	+/-0.50	
M3PFHxS	197890.1	3.201883	192,516.00	3.193817	103	50 - 150	0.0081	+/-0.50	
M4PFHpA	1283716	3.170783	1,285,304.00	3.1627	100	50 - 150	0.0081	+/-0.50	
M8PFOA	1506973	3.445833	1,450,100.00	3.445833	104	50 - 150	0.0000	+/-0.50	
M8PFOS	219852.4	3.636183	228,157.00	3.636183	96	50 - 150	0.0000	+/-0.50	
M9PFNA	1500780	3.637217	1,403,264.00	3.637217	107	50 - 150	0.0000	+/-0.50	
MPFDoA	1226190	4.08865	1,494,566.00	4.08065	82	50 - 150	0.0080	+/-0.50	
D5-NEtFOSAA	311707.4	3.9535	339,024.00	3.945517	92	50 - 150	0.0080	+/-0.50	
D3-NMeFOSAA	390538.3	3.873767	419,564.00	3.873767	93	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B361067-BLK1)			Lab File ID: B361067-BLK1.d			Analyzed: 12/28/23 21:47			
M8FOSA	581097.6	4.036533	917,199.00	4.036533	63	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	186744.7	2.62	344,794.00	2.62	54	50 - 150	0.0000	+/-0.50	
M2PFTA	1202198	4.35405	1,825,146.00	4.35405	66	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	243284.5	3.835017	325,660.00	3.835017	75	50 - 150	0.0000	+/-0.50	
MPFBA	677262	1.0917	973,516.00	1.0917	70	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	230914.5	2.929717	303,808.00	2.921133	76	50 - 150	0.0086	+/-0.50	
M6PFDA	1165586	3.8355	1,678,611.00	3.82755	69	50 - 150	0.0080	+/-0.50	
M3PFBS	294337.2	1.986217	421,258.00	1.986217	70	50 - 150	0.0000	+/-0.50	
M7PFUnA	1103658	3.978017	1,844,773.00	3.978017	60	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	193335.1	3.48535	246,266.00	3.48535	79	50 - 150	0.0000	+/-0.50	
M5PFPeA	624963.4	1.799667	846,062.00	1.799667	74	50 - 150	0.0000	+/-0.50	
M5PFHxA	1114600	2.706317	1,533,051.00	2.706317	73	50 - 150	0.0000	+/-0.50	
M3PFHxS	170427.4	3.266833	245,975.00	3.25875	69	50 - 150	0.0081	+/-0.50	
M4PFHpA	1151061	3.2357	1,550,063.00	3.2357	74	50 - 150	0.0000	+/-0.50	
M8PFOA	1330943	3.493867	1,635,755.00	3.493867	81	50 - 150	0.0000	+/-0.50	
M8PFOS	174737.5	3.676117	258,464.00	3.676117	68	50 - 150	0.0000	+/-0.50	
M9PFNA	1081554	3.67715	1,495,942.00	3.67715	72	50 - 150	0.0000	+/-0.50	
MPFDoA	1005416	4.112633	1,727,274.00	4.112633	58	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	275236.6	3.985483	450,264.00	3.985483	61	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	345813	3.9059	520,003.00	3.9059	67	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B361067-BS1)			Lab File ID: B361067-BS1.d			Analyzed: 12/28/23 21:33			
M8FOSA	462877.2	4.036533	917,199.00	4.036533	50	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	157811.2	2.62	344,794.00	2.62	46	50 - 150	0.0000	+/-0.50	*
M2PFTA	1033471	4.35405	1,825,146.00	4.35405	57	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	184635.3	3.835017	325,660.00	3.835017	57	50 - 150	0.0000	+/-0.50	
MPFBA	576188.5	1.100017	973,516.00	1.0917	59	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	196347.1	2.929717	303,808.00	2.921133	65	50 - 150	0.0086	+/-0.50	
M6PFDA	984374.8	3.8355	1,678,611.00	3.82755	59	50 - 150	0.0080	+/-0.50	
M3PFBS	254455.5	1.986217	421,258.00	1.986217	60	50 - 150	0.0000	+/-0.50	
M7PFUnA	928224.9	3.978017	1,844,773.00	3.978017	50	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	158132.4	3.48535	246,266.00	3.48535	64	50 - 150	0.0000	+/-0.50	
M5PFPeA	533464.2	1.799667	846,062.00	1.799667	63	50 - 150	0.0000	+/-0.50	
M5PFHxA	954248.5	2.7145	1,533,051.00	2.706317	62	50 - 150	0.0082	+/-0.50	
M3PFHxS	140507.4	3.266833	245,975.00	3.25875	57	50 - 150	0.0081	+/-0.50	
M4PFHpA	954176.6	3.2357	1,550,063.00	3.2357	62	50 - 150	0.0000	+/-0.50	
M8PFOA	1084792	3.493867	1,635,755.00	3.493867	66	50 - 150	0.0000	+/-0.50	
M8PFOS	151940.6	3.676117	258,464.00	3.676117	59	50 - 150	0.0000	+/-0.50	
M9PFNA	913978.8	3.67715	1,495,942.00	3.67715	61	50 - 150	0.0000	+/-0.50	
MPFDoA	875322.9	4.112633	1,727,274.00	4.112633	51	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	249789.2	3.985483	450,264.00	3.985483	55	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	282457.7	3.9059	520,003.00	3.9059	54	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B361067-BSD1)			Lab File ID: B361067-BSD1.d			Analyzed: 12/28/23 21:40			
M8FOSA	514454.5	4.036533	917,199.00	4.036533	56	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	170160.5	2.62	344,794.00	2.62	49	50 - 150	0.0000	+/-0.50	*
M2PFTA	1141424	4.345933	1,825,146.00	4.35405	63	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	207282.5	3.835017	325,660.00	3.835017	64	50 - 150	0.0000	+/-0.50	
MPFBA	615521.4	1.0917	973,516.00	1.0917	63	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	211255.3	2.929717	303,808.00	2.921133	70	50 - 150	0.0086	+/-0.50	
M6PFDA	1045449	3.8355	1,678,611.00	3.82755	62	50 - 150	0.0080	+/-0.50	
M3PFBS	264352.8	1.986217	421,258.00	1.986217	63	50 - 150	0.0000	+/-0.50	
M7PFUnA	1096342	3.978017	1,844,773.00	3.978017	59	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	177137.7	3.48535	246,266.00	3.48535	72	50 - 150	0.0000	+/-0.50	
M5PFPeA	568139.6	1.799667	846,062.00	1.799667	67	50 - 150	0.0000	+/-0.50	
M5PFHxA	990086.8	2.706317	1,533,051.00	2.706317	65	50 - 150	0.0000	+/-0.50	
M3PFHxS	152599.2	3.266833	245,975.00	3.25875	62	50 - 150	0.0081	+/-0.50	
M4PFHpA	1032255	3.2357	1,550,063.00	3.2357	67	50 - 150	0.0000	+/-0.50	
M8PFOA	1126134	3.493867	1,635,755.00	3.493867	69	50 - 150	0.0000	+/-0.50	
M8PFOS	143775.2	3.676117	258,464.00	3.676117	56	50 - 150	0.0000	+/-0.50	
M9PFNA	973770.9	3.67715	1,495,942.00	3.67715	65	50 - 150	0.0000	+/-0.50	
MPFDoA	939403.9	4.112633	1,727,274.00	4.112633	54	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	262717.8	3.985483	450,264.00	3.985483	58	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	326695.5	3.9059	520,003.00	3.9059	63	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Resolution Check (S098170-RES1)			Lab File ID: BIC1_ID_122123.d			Analyzed: 12/21/23 13:12			
M8FOSA				3.972583		50 - 150	-3.9726	+/-0.50	*
M2-4:2FTS				2.562517		50 - 150	-2.5625	+/-0.50	*
M2PFTA				4.329683		50 - 150	-4.3297	+/-0.50	*
M2-8:2FTS				3.8028		50 - 150	-3.8028	+/-0.50	*
MPFBA				1.058467		50 - 150	-1.0585	+/-0.50	*
M3HFPO-DA				2.872033		50 - 150	-2.8720	+/-0.50	*
M6PFDA				3.79535		50 - 150	-3.7954	+/-0.50	*
M3PFBS				1.9364		50 - 150	-1.9364	+/-0.50	*
M7PFUnA				3.946033		50 - 150	-3.9460	+/-0.50	*
M2-6:2FTS				3.445283		50 - 150	-3.4453	+/-0.50	*
M5PFPeA				1.757717		50 - 150	-1.7577	+/-0.50	*
M5PFHxA				2.646767		50 - 150	-2.6468	+/-0.50	*
M3PFHxS				3.218333		50 - 150	-3.2183	+/-0.50	*
M4PFHpA				3.186933		50 - 150	-3.1869	+/-0.50	*
M8PFOA				3.453817		50 - 150	-3.4538	+/-0.50	*
M8PFOS				3.636183		50 - 150	-3.6362	+/-0.50	*
M9PFNA				3.6452		50 - 150	-3.6452	+/-0.50	*
MPFDoA				4.08865		50 - 150	-4.0887	+/-0.50	*
D5-NEtFOSAA	1658.416	3.905533		3.9535		50 - 150	-0.0480	+/-0.50	*
D3-NMeFOSAA	161.3761	3.897717		3.873767		50 - 150	0.0240	+/-0.50	*

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SOP-454 PFAS in Water	
Perfluorobutanoic acid (PFBA)	NH-P,PA,NY
Perfluorobutanesulfonic acid (PFBS)	NH-P,PA,NY
Perfluoropentanoic acid (PFPeA)	NH-P,PA,NY
Perfluorohexanoic acid (PFHxA)	NH-P,PA,NY
11Cl-PF3OUdS (F53B Major)	NH-P,PA,NY
9Cl-PF3ONS (F53B Minor)	NH-P,PA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,PA,NY
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,PA,NY
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P,PA
Perfluorodecanoic acid (PFDA)	NH-P,PA,NY
Perfluorododecanoic acid (PFDoA)	NH-P,PA,NY
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P,PA,NY
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,PA,NY
N-EtFOSAA (NEtFOSAA)	NH-P,PA,NY
N-MeFOSAA (NMeFOSAA)	NH-P,PA,NY
Perfluorotetradecanoic acid (PFTA)	NH-P,PA,NY
Perfluorotridecanoic acid (PFTrDA)	NH-P,PA,NY
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P,PA,NY
Perfluorodecanesulfonic acid (PFDS)	NH-P,PA
Perfluorooctanesulfonamide (FOSA)	NH-P,PA
Perfluorononanesulfonic acid (PFNS)	NH-P,PA
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P,PA
Perfluoro-1-butanesulfonamide (FBSA)	NH-P,PA
Perfluorohexanesulfonic acid (PFHxS)	NH-P,PA,NY
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P,PA,NY
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P,PA,NY
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P,PA,NY
Perfluoropentanesulfonic acid (PFPeS)	NH-P,PA,NY
Perfluoroundecanoic acid (PFUnA)	NH-P,PA,NY
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,PA
Perfluoroheptanoic acid (PFHpA)	NH-P,PA,NY
Perfluorooctanoic acid (PFOA)	NH-P,PA,NY
Perfluorooctanesulfonic acid (PFOS)	NH-P,PA,NY
Perfluorononanoic acid (PFNA)	NH-P,PA,NY
SOP-466 PFAS in Soil	
Perfluorobutanoic acid (PFBA)	NH-P,PA,NY
Perfluorobutanesulfonic acid (PFBS)	NH-P,PA
Perfluoropentanoic acid (PFPeA)	NH-P,PA,NY
Perfluorohexanoic acid (PFHxA)	NH-P,PA,NY
11Cl-PF3OUdS (F53B Major)	NH-P,PA
9Cl-PF3ONS (F53B Minor)	NH-P,PA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,PA
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,PA
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P,PA,NY
Perfluorodecanoic acid (PFDA)	NH-P,PA,NY
Perfluorododecanoic acid (PFDoA)	NH-P,PA,NY

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SOP-466 PFAS in Soil	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P,PA
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,PA
N-EtFOSAA (NEtFOSAA)	NH-P,PA,NY
N-MeFOSAA (NMeFOSAA)	NH-P,PA
Perfluorotetradecanoic acid (PFTA)	NH-P,PA,NY
Perfluorotridecanoic acid (PFTrDA)	NH-P,PA,NY
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P,PA
Perfluorodecanesulfonic acid (PFDS)	NH-P,PA
Perfluorooctanesulfonamide (FOSA)	NH-P,PA
Perfluorononanesulfonic acid (PFNS)	NH-P,PA
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P,PA
Perfluoro-1-butanesulfonamide (FBSA)	NH-P,PA
Perfluorohexanesulfonic acid (PFHxS)	NH-P,PA
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P,PA
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P,PA
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P,PA
Perfluoropentanesulfonic acid (PFPeS)	NH-P,PA
Perfluoroundecanoic acid (PFUnA)	NH-P,PA,NY
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,PA
Perfluoroheptanoic acid (PFHpA)	NH-P,PA,NY
Perfluorooctanoic acid (PFOA)	NH-P,PA,NY
Perfluorooctanesulfonic acid (PFOS)	NH-P,PA,NY
Perfluorononanoic acid (PFNA)	NH-P,PA,NY

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
NY	New York State Department of Health	10899 NELAP	04/1/2024
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2024
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2024

23L1211

Pace Analytical®

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Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev S_07/13/2021

Page 1 of 2

Company Name:	Horsley Witten Group
Address:	90 Route 6A, Sandwich, MA
Phone:	508-833-6600
Project Name:	HW-Capecod Gateway
Project Location:	Hyannis
Project Number:	23070
Project Manager:	Mark Nelson / Bryan Massa
Pace Quote Name/Number:	
Invoice Recipient:	
Sampled By:	Caroline Armstrong

Requested Turnaround Time
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☒ Due Date:

Rush Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS (isotope dilution)
1	HW-I(S)	12/5/23	1010	G	GW				2			X
2	HW-I(M)		1200									X
3	HW-I(D)		1115									X
4	HW-P(S)		1315									X
5	HW-P(M)		1555									X
6	HW-3	12/6/23	1030									X
7	HW-302		1055									X
8	~~HW-P~~ HW-S(S)		1130									X
9	HW-S(M)		1355									X

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y (N)
Glassware in freezer? Y (N)
Prepackaged Cooler? Y (N)

*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:
Caroline Armstrong	12/8 1040
Received by: (signature)	Date/Time:
Dan Sheehan	12/8/23 1040
Relinquished by: (signature)	Date/Time:
Dan Sheehan	12/8 1735
Received by: (signature)	Date/Time:
[illegible] 3.1	12/8/23 1735
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments: MCP-GW-1

Detection Limit Requirements
MA: GW-1
CT:
Other:

Special Requirements
☒ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

d3L1211

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA D1D28

Doc # 3B1 Rev 5_D7/13/2021

Page 2 of 2

Company Name:	Horsley Witten Group
Address:	90 Route 6A sandwich, MA
Phone:	508-833-6600
Project Name:	HYA-Capecod Gateway
Project Location:	23070
Project Number:	Hyannis
Project Manager:	Marc Nelson / Bryan Massa
Pace Quote Name/Number:	
Invoice Recipient:	
Sampled By:	Caroline Armstrong

Requested Turnaround Time
7-Day ☐ 1D-Day ☐
PFAS 10-Day (std) ☒ Due Date:

Rush-Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS(Isotope dilution)
10	ME-1	12/6/23	1417	G	GW				2			X
11	ME-2	↓	1405	G	GW				2			X
12	ME-3	↓	1410	G	GW				2			X

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS_____
GLASS_____
PLASTIC_____
BACTERIA_____
ENCORE_____

Glassware in the fridge? Y / N
Glassware in freezer? Y / N
Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Relinquished by: (signature)	Date/Time:	Client Comments: MCP GW-1
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements
MA: GW-1
GT:
Other:

Special Requirements
☒ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-ELON-0001 v07_Sample Receiving Checklist
	Effective Date: 07/13/2023

Log In Back-Sheet

Client Horsley Witten

Project HYA

MCP/RCP Required MA MCP

Deliverable Package Requirement CW-1

Location MA

PWSID# (When Applicable) NA

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐ _____

Received By / Date / Time GR 12/8/23 1735

Back-Sheet By / Date / Time GR 12/8/23 2117

Temperature Method gun # 5

Temp < 6° C Actual Temperature 3.1

Rush Samples: Yes / (No) Notify _____

Short Hold: Yes / (No) Notify _____

Notes regarding Samples/COC outside of SOP:

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
Is there enough Volume	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☐	☑
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☑

Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Additional Container Notes

Note: West Virginia requires all samples to have their temperature taken. Note any outliers.

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-ELON-0001 v07_Sample Receiving Checklist
	Effective Date: 07/13/2023

Sample			
16oz Amb/Clear	(Circle Amb/Clear)	Soils Jars	
8oz Amb/Clear			
4oz Amb/Clear			
2oz Amb/Clear			
Unpreserved	1 Liter	Ambers	
HCL			
Sulfuric			
Sulfuric	250mL		
Phosphoric			
HCl			
Unpreserved	100mL		
Unpreserved	1 Liter	Plastics	
Sulfuric			
Unpreserved	500mL		
Sulfuric			
Unpreserved	250mL		
Trizma			
Sulfuric			
Nitric			
NaOH			
Ammonium Acetate			
NaOH/Zinc			
Unpreserved		VOA Vials	
HCl			
MeOH			
D.I. Water			
BiSulfate			
Col/Bact		Other / Fill in	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2																		

Qualtrax ID: 120836

ANALYTICAL REPORT

Lab Number:	L2332762
Client:	Horseley & Witten, Inc. Sextant Hill Office Park 90 Route 6A Sandwich, MA 02563
ATTN:	Brian Massa
Phone:	(508) 833-6600
Project Name:	CAPECOD GATEWAY AIRPORT
Project Number:	23070
Report Date:	06/30/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0825), DoD (L2474), FL (E87814), IL (200081), IN (C-MA-04), KY (KY98046), LA (85084), ME (MA00030), MD (350), MI (99110) , NJ (MA015), NY (11627), NC (685), OH (CL106), OR (MA-0262), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #525-23-107-88708), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070

Lab Number: L2332762
Report Date: 06/30/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2332762-01	HW-I (S)	WATER	HYANIS, MA	06/07/23 10:10	06/09/23
L2332762-02	HW-I (M)	WATER	HYANIS, MA	06/07/23 12:15	06/09/23
L2332762-03	HW-I (D)	WATER	HYANIS, MA	06/07/23 11:15	06/09/23
L2332762-04	HW-P (S)	WATER	HYANIS, MA	06/08/23 10:25	06/09/23
L2332762-05	HW-P (M)	WATER	HYANIS, MA	06/08/23 11:48	06/09/23
L2332762-06	HW-S (S)	WATER	HYANIS, MA	06/09/23 10:08	06/09/23
L2332762-07	HW-S (M)	WATER	HYANIS, MA	06/09/23 12:25	06/09/23

Project Name:	CAPECOD GATEWAY AIRPORT	**Lab Number:**	L2332762
Project Number:	23070	**Report Date:**	06/30/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	CAPECOD GATEWAY AIRPORT	**Lab Number:**	L2332762
Project Number:	23070	**Report Date:**	06/30/23

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Perfluorinated Alkyl Acids by Isotope Dilution

L2332762-01 and -06: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the high concentrations in the screen results.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Darian Dailey

Title: Technical Director/Representative Date: 06/30/23

ORGANICS

SEMIVOLATILES

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-01
Client ID: HW-I (S)
Sample Location: HYANIS, MA

Date Collected: 06/07/23 10:10
Date Received: 06/09/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 18:05
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	43.0		ng/l	20.0	4.08	1
Perfluoropentanoic Acid (PFPeA)	166		ng/l	20.0	3.96	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	20.0	2.38	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	20.0	4.52	1
Perfluorohexanoic Acid (PFHxA)	87.4		ng/l	20.0	3.28	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	20.0	2.45	1
Perfluoroheptanoic Acid (PFHpA)	106		ng/l	20.0	2.25	1
Perfluorohexanesulfonic Acid (PFHxS)	69.2		ng/l	20.0	3.76	1
Perfluorooctanoic Acid (PFOA)	172		ng/l	20.0	2.36	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1530		ng/l	20.0	13.3	1
Perfluoroheptanesulfonic Acid (PFHpS)	9.88	J	ng/l	20.0	6.88	1
Perfluorononanoic Acid (PFNA)	235		ng/l	20.0	3.12	1
Perfluorooctanesulfonic Acid (PFOS)	708		ng/l	20.0	5.04	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	20.0	3.04	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	20.0	12.1	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	20.0	11.2	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	20.0	6.48	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	20.0	2.60	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	20.0	9.80	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	20.0	5.80	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	20.0	8.04	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	20.0	3.72	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	20.0	3.27	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	20.0	2.48	1

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-01 Date Collected: 06/07/23 10:10
Client ID: HW-I (S) Date Received: 06/09/23
Sample Location: HYANIS, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	112		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	113		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		22-136

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-02
Client ID: HW-I (M)
Sample Location: HYANIS, MA

Date Collected: 06/07/23 12:15
Date Received: 06/09/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 18:21
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.553	J	ng/l	1.74	0.354	1
Perfluoropentanoic Acid (PFPeA)	0.987	J	ng/l	1.74	0.344	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.207	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.393	1
Perfluorohexanoic Acid (PFHxA)	0.963	J	ng/l	1.74	0.285	1
Perfluoropentanesulfonic Acid (PFPeS)	0.219	JF	ng/l	1.74	0.213	1
Perfluoroheptanoic Acid (PFHpA)	1.16	J	ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	5.92		ng/l	1.74	0.327	1
Perfluorooctanoic Acid (PFOA)	0.977	J	ng/l	1.74	0.205	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.598	1
Perfluorononanoic Acid (PFNA)	0.518	J	ng/l	1.74	0.271	1
Perfluorooctanesulfonic Acid (PFOS)	6.76		ng/l	1.74	0.438	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.264	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.05	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.973	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.563	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.852	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.504	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.698	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.323	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.284	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.215	1

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-02 Date Collected: 06/07/23 12:15
Client ID: HW-I (M) Date Received: 06/09/23
Sample Location: HYANIS, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	115		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	109		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		22-136

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-03
Client ID: HW-I (D)
Sample Location: HYANIS, MA

Date Collected: 06/07/23 11:15
Date Received: 06/09/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 18:38
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	10.2		ng/l	1.74	0.356	1
Perfluoropentanoic Acid (PFPeA)	33.4		ng/l	1.74	0.345	1
Perfluorobutanesulfonic Acid (PFBS)	1.15	J	ng/l	1.74	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.394	1
Perfluorohexanoic Acid (PFHxA)	25.8		ng/l	1.74	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	1.48	J	ng/l	1.74	0.214	1
Perfluoroheptanoic Acid (PFHpA)	10.8		ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	28.0		ng/l	1.74	0.328	1
Perfluorooctanoic Acid (PFOA)	10.1		ng/l	1.74	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.43		ng/l	1.74	0.600	1
Perfluorononanoic Acid (PFNA)	1.17	J	ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	71.9		ng/l	1.74	0.440	1
Perfluorodecanoic Acid (PFDA)	0.296	JF	ng/l	1.74	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.977	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.565	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.855	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.506	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.701	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.285	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-03 Date Collected: 06/07/23 11:15
Client ID: HW-I (D) Date Received: 06/09/23
Sample Location: HYANIS, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	112		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	70		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	63		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		22-136

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-04
Client ID: HW-P (S)
Sample Location: HYANIS, MA

Date Collected: 06/08/23 10:25
Date Received: 06/09/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 18:54
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	12.3		ng/l	1.76	0.359	1
Perfluoropentanoic Acid (PFPeA)	28.6		ng/l	1.76	0.348	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.209	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.76	0.397	1
Perfluorohexanoic Acid (PFHxA)	15.5		ng/l	1.76	0.288	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	6.98		ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	0.798	JF	ng/l	1.76	0.330	1
Perfluorooctanoic Acid (PFOA)	14.5		ng/l	1.76	0.207	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.41		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.605	1
Perfluorononanoic Acid (PFNA)	15.1		ng/l	1.76	0.274	1
Perfluorooctanesulfonic Acid (PFOS)	1.38	JF	ng/l	1.76	0.443	1
Perfluorodecanoic Acid (PFDA)	0.464	J	ng/l	1.76	0.267	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.985	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.570	1
Perfluoroundecanoic Acid (PFUnA)	0.243	JF	ng/l	1.76	0.228	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.862	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.510	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.707	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.327	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.76	0.218	1

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-04 Date Collected: 06/08/23 10:25
Client ID: HW-P (S) Date Received: 06/09/23
Sample Location: HYANIS, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	70		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	109		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	67		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		22-136

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-05
Client ID: HW-P (M)
Sample Location: HYANIS, MA

Date Collected: 06/08/23 11:48
Date Received: 06/09/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 19:11
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	6.07		ng/l	1.74	0.354	1
Perfluoropentanoic Acid (PFPeA)	14.9		ng/l	1.74	0.344	1
Perfluorobutanesulfonic Acid (PFBS)	0.278	J	ng/l	1.74	0.207	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.392	1
Perfluorohexanoic Acid (PFHxA)	7.88		ng/l	1.74	0.285	1
Perfluoropentanesulfonic Acid (PFPeS)	0.354	J	ng/l	1.74	0.213	1
Perfluoroheptanoic Acid (PFHpA)	4.51		ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	3.40		ng/l	1.74	0.326	1
Perfluorooctanoic Acid (PFOA)	3.78		ng/l	1.74	0.205	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.598	1
Perfluorononanoic Acid (PFNA)	7.46		ng/l	1.74	0.271	1
Perfluorooctanesulfonic Acid (PFOS)	2.75		ng/l	1.74	0.438	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.264	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.05	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.973	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.563	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.851	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.504	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.698	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.323	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.284	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.215	1

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-05 Date Collected: 06/08/23 11:48
Client ID: HW-P (M) Date Received: 06/09/23
Sample Location: HYANIS, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		22-136

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-06
Client ID: HW-S (S)
Sample Location: HYANIS, MA

Date Collected: 06/09/23 10:08
Date Received: 06/09/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 19:28
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	32.3		ng/l	10.0	2.04	1
Perfluoropentanoic Acid (PFPeA)	135		ng/l	10.0	1.98	1
Perfluorobutanesulfonic Acid (PFBS)	1.74	J	ng/l	10.0	1.19	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	10.0	2.26	1
Perfluorohexanoic Acid (PFHxA)	77.0		ng/l	10.0	1.64	1
Perfluoropentanesulfonic Acid (PFPeS)	3.26	J	ng/l	10.0	1.23	1
Perfluoroheptanoic Acid (PFHpA)	46.7		ng/l	10.0	1.13	1
Perfluorohexanesulfonic Acid (PFHxS)	30.0		ng/l	10.0	1.88	1
Perfluorooctanoic Acid (PFOA)	52.1		ng/l	10.0	1.18	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1150		ng/l	10.0	6.66	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	10.0	3.44	1
Perfluorononanoic Acid (PFNA)	44.2		ng/l	10.0	1.56	1
Perfluorooctanesulfonic Acid (PFOS)	185		ng/l	10.0	2.52	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	10.0	1.52	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	10.0	6.06	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	10.0	5.60	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	10.0	3.24	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	10.0	1.30	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	10.0	4.90	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	10.0	2.90	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	10.0	4.02	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	10.0	1.86	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	10.0	1.64	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	10.0	1.24	1

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-06 Date Collected: 06/09/23 10:08
Client ID: HW-S (S) Date Received: 06/09/23
Sample Location: HYANIS, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	74		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	126		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		22-136

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-07
Client ID: HW-S (M)
Sample Location: HYANIS, MA

Date Collected: 06/09/23 12:25
Date Received: 06/09/23
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 19:44
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	10.8		ng/l	1.77	0.360	1
Perfluoropentanoic Acid (PFPeA)	38.0		ng/l	1.77	0.350	1
Perfluorobutanesulfonic Acid (PFBS)	0.533	J	ng/l	1.77	0.210	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.77	0.399	1
Perfluorohexanoic Acid (PFHxA)	24.1		ng/l	1.77	0.290	1
Perfluoropentanesulfonic Acid (PFPeS)	0.749	J	ng/l	1.77	0.216	1
Perfluoroheptanoic Acid (PFHpA)	25.7		ng/l	1.77	0.199	1
Perfluorohexanesulfonic Acid (PFHxS)	21.6		ng/l	1.77	0.332	1
Perfluorooctanoic Acid (PFOA)	29.7		ng/l	1.77	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	198		ng/l	1.77	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.93		ng/l	1.77	0.608	1
Perfluorononanoic Acid (PFNA)	26.2		ng/l	1.77	0.276	1
Perfluorooctanesulfonic Acid (PFOS)	255		ng/l	1.77	0.445	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.77	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.23		ng/l	1.77	1.07	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.77	0.989	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.77	0.572	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.77	0.230	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.77	0.865	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.77	0.512	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.77	0.710	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.77	0.328	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.77	0.289	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.77	0.219	1

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

SAMPLE RESULTS

Lab ID: L2332762-07 Date Collected: 06/09/23 12:25
Client ID: HW-S (M) Date Received: 06/09/23
Sample Location: HYANIS, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	114		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	144		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	103		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		22-136

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 12:39
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-07 Batch: WG1797335-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248

Project Name: CAPECOD GATEWAY AIRPORT **Lab Number:** L2332762

Project Number: 23070 **Report Date:** 06/30/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 134,LCMSMS-ID
Analytical Date: 06/29/23 12:39
Analyst: AC

Extraction Method: ALPHA 23528
Extraction Date: 06/28/23 16:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-07 Batch: WG1797335-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	103		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	108		14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		22-136

Lab Control Sample Analysis
Batch Quality Control

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070

Lab Number: L2332762
Report Date: 06/30/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07 Batch: WG1797335-2								
Perfluorobutanoic Acid (PFBA)	99		-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	100		-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	94		-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	99		-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	99		-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	101		-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	100		-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	96		-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	98		-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	96		-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	98		-		61-179	-		30
Perfluorononanoic Acid (PFNA)	102		-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	93		-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	101		-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	100		-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	103		-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	102		-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	104		-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	103		-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	92		-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	95		-		67-153	-		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPECOD GATEWAY AIRPORT

Project Number: 23070

Lab Number: L2332762

Report Date: 06/30/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07 Batch: WG1797335-2								
Perfluorotridecanoic Acid (PFTrDA)	113		-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	100		-		59-182	-		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104				58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112				62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101				70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107				12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96				71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103				62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	112				14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100				59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102				62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	121				10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	103				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107				55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31				5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	109				27-126
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	109				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103				22-136

Matrix Spike Analysis
Batch Quality Control

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070
Lab Number: L2332762
Report Date: 06/30/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1797335-3 QC Sample: L2332157-01 Client ID: MS Sample												
Perfluorobutanesulfonic Acid (PFBS)	1.07J	35	33.4	92		-	-		65-157	-		30
Perfluorohexanoic Acid (PFHxA)	3.71	39.4	41.4	96		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.335J	37.1	36.0	96		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	2.33	39.4	40.3	96		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.81J	36	36.8	97		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	5.04	39.4	42.7	96		-	-		63-159	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	37.6	37.7	100		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.390J	39.4	40.8	103		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	3.28F	36.5	38.3	96		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	39.4	39.8	101		-	-		63-171	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	39.4	38.0	96		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	39.4	39.2	100		-	-		60-153	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	39.4	36.3	92		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	39.4	38.5	98		-	-		67-153	-		30
Perfluorotridecanoic Acid (PFTrDA)	ND	39.4	42.7	108		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTA)	ND	39.4	38.4	98		-	-		59-182	-		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	ND	384	378	98		-	-		57-162	-		30
4,8-Dioxa-3h-Perfluorononanoic Acid (ADONA)	ND	37.2	32.0	86		-	-		69-143	-		30
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid (9Cl-PF3ONS)	ND	36.8	34.4	94		-	-		55-158	-		30
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid (11Cl-PF3OUdS)	ND	37.2	35.9	97		-	-		52-156	-		30

Matrix Spike Analysis

Batch Quality Control

Project Name: CAPECOD GATEWAY AIRPORT

Project Number: 23070

Lab Number: L2332762

Report Date: 06/30/23

Parameter	*Native Sample*	*MS Added*	*MS Found*	*MS %Recovery*	*Qual*	*MSD Found*	*MSD %Recovery*	*Qual*	*Recovery Limits*	*RPD*	*Qual*	*RPD Limits*
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1797335-3 QC Sample: L2332157-01 Client ID: MS Sample												

Surrogate (Extracted Internal Standard)	*MS % Recovery*	*MS Qualifier*	*MSD % Recovery*	*MSD Qualifier*	*Acceptance Criteria*
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	71				10-165
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				27-126
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95				24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85				55-137
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				62-124
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75				57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76				60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99				71-134
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87				48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86				22-136
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90				69-131
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80				62-129
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78				59-139
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104				70-131

Lab Duplicate Analysis
Batch Quality Control

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070

Lab Number: L2332762
Report Date: 06/30/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1797335-4 QC Sample: L2332728-01 Client ID: DUP Sample						
Perfluorobutanoic Acid (PFBA)	14.1	13.7	ng/l	3		30
Perfluoropentanoic Acid (PFPeA)	10.9	10.0	ng/l	9		30
Perfluorobutanesulfonic Acid (PFBS)	1.37J	1.41J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	9.19	8.84	ng/l	4		30
Perfluoropentanesulfonic Acid (PFPeS)	0.793J	0.630J	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	9.92	9.43	ng/l	5		30
Perfluorohexanesulfonic Acid (PFHxS)	4.92	4.87	ng/l	1		30
Perfluorooctanoic Acid (PFOA)	62.1	59.2	ng/l	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.13	1.73J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	2.13	2.08	ng/l	2		30
Perfluorooctanesulfonic Acid (PFOS)	23.0	22.6	ng/l	2		30
Perfluorodecanoic Acid (PFDA)	0.337JF	0.295J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070

Lab Number: L2332762
Report Date: 06/30/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1797335-4 QC Sample: L2332728-01 Client ID: DUP Sample						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid (HFPO-DA)	29.4	23.9	ng/l	21		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		83		58-132
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		84		62-163
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		84		70-131
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	**158**	Q	**153**	Q	12-142
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		68		57-129
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		75		60-129
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		84		71-134
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		80		62-129
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	**169**	Q	**152**	Q	14-147
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		77		59-139
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		71		69-131
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		67		62-124
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	155		136		10-162
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	108		84		24-116
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75		65		55-137
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		11		5-112
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	121		103		27-126

Lab Duplicate Analysis
Batch Quality Control

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070

Lab Number: L2332762
Report Date: 06/30/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits

Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-07 QC Batch ID: WG1797335-4 QC Sample: L2332728-01 Client ID: DUP Sample

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		61		48-131
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		60		22-136
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-13C3-Propanoic Acid (M3HFPO-DA)	75		71		10-165

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070

Lab Number: L2332762
Report Date: 06/30/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2332762-01A	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-01B	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-02A	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-02B	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-03A	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-03B	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-04A	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-04B	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-05A	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-05B	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-06A	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-06B	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-07A	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)
L2332762-07B	Plastic 250ml unpreserved	A	NA		2.9	Y	Absent		A2-537-ISOTOPE(28)

*Values in parentheses indicate holding time in days

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070
Lab Number: L2332762
Report Date: 06/30/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
PERFLUOROALKYL CARBOXYLIC ACIDS (PFCAs)		
Perfluorooctadecanoic Acid	PFODA	16517-11-6
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5
Perfluorotetradecanoic Acid	PFTA/PFTeDA	376-06-7
Perfluorotridecanoic Acid	PFTrDA	72629-94-8
Perfluorododecanoic Acid	PFDoA	307-55-1
Perfluoroundecanoic Acid	PFUnA	2058-94-8
Perfluorodecanoic Acid	PFDA	335-76-2
Perfluorononanoic Acid	PFNA	375-95-1
Perfluorooctanoic Acid	PFOA	335-67-1
Perfluoroheptanoic Acid	PFHpA	375-85-9
Perfluorohexanoic Acid	PFHxA	307-24-4
Perfluoropentanoic Acid	PFPeA	2706-90-3
Perfluorobutanoic Acid	PFBA	375-22-4
PERFLUOROALKYL SULFONIC ACIDS (PFSAs)		
Perfluorododecanesulfonic Acid	PFDoDS/PFDoS	79780-39-5
Perfluorodecanesulfonic Acid	PFDS	335-77-3
Perfluorononanesulfonic Acid	PFNS	68259-12-1
Perfluorooctanesulfonic Acid	PFOS	1763-23-1
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8
Perfluorohexanesulfonic Acid	PFHxS	355-46-4
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4
Perfluorobutanesulfonic Acid	PFBS	375-73-5
Perfluoropropanesulfonic Acid	PFPrS	423-41-6
FLUOROTELOMERS		
1H,1H,2H,2H-Perfluorododecanesulfonic Acid	10:2FTS	120226-60-0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid	8:2FTS	39108-34-4
1H,1H,2H,2H-Perfluorooctanesulfonic Acid	6:2FTS	27619-97-2
1H,1H,2H,2H-Perfluorohexanesulfonic Acid	4:2FTS	757124-72-4
PERFLUOROALKANE SULFONAMIDES (FASAs)		
Perfluorooctanesulfonamide	FOSA/PFOSA	754-91-6
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8
PERFLUOROALKANE SULFONYL SUBSTANCES		
N-Ethyl Perfluorooctanesulfonamido Ethanol	NEtFOSE	1691-99-2
N-Methyl Perfluorooctanesulfonamido Ethanol	NMeFOSE	24448-09-7
N-Ethyl Perfluorooctanesulfonamidoacetic Acid	NEtFOSAA	2991-50-6
N-Methyl Perfluorooctanesulfonamidoacetic Acid	NMeFOSAA	2355-31-9
PER- and POLYFLUOROALKYL ETHER CARBOXYLIC ACIDS		
2,3,3,3-Tetrafluoro-2-[1,1,2,2,3,3,3-Heptafluoropropoxy]-Propanoic Acid	HFPO-DA	13252-13-6
4,8-Dioxa-3h-Perfluorononanoic Acid	ADONA	919005-14-4
CHLORO-PERFLUOROALKYL SULFONIC ACIDS		
11-Chloroeicosafluoro-3-Oxaundecane-1-Sulfonic Acid	11Cl-PF3OUdS	763051-92-9
9-Chlorohexadecafluoro-3-Oxanone-1-Sulfonic Acid	9Cl-PF3ONS	756426-58-1
PERFLUOROETHER SULFONIC ACIDS (PFESAs)		
Perfluoro(2-Ethoxyethane)Sulfonic Acid	PFEESA	113507-82-7
PERFLUOROETHER/POLYETHER CARBOXYLIC ACIDS (PFPCAs)		
Perfluoro-3-Methoxypropanoic Acid	PFMPA	377-73-1
Perfluoro-4-Methoxybutanoic Acid	PFMBA	863090-89-5
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6

Project Name: CAPECOD GATEWAY AIRPORT
Project Number: 23070
Lab Number: L2332762
Report Date: 06/30/23

PFAS PARAMETER SUMMARY

Parameter	Acronym	CAS Number
FLUOROTELOMER CARBOXYLIC ACIDS (FTCAs)		
3-Perfluoroheptyl Propanoic Acid	7:3FTCA	812-70-4
2H,2H,3H,3H-Perfluorooctanoic Acid	5:3FTCA	914637-49-3
3-Perfluoropropyl Propanoic Acid	3:3FTCA	356-02-5

Project Name:	CAPECOD GATEWAY AIRPORT	**Lab Number:**	L2332762
Project Number:	23070	**Report Date:**	06/30/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

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Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers

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Data Qualifiers

Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	CAPECOD GATEWAY AIRPORT	**Lab Number:**	L2332762
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REFERENCES

134 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS) using Isotope Dilution. Alpha SOP 23528.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 6/9/23

ALPHA Job #: L2332762

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: HORSLEY WITTEN GROUP
Address: 90 ROUTE 6A
SANDWICH, MA 02563
Phone: 508-833-6600
Email: jgustavesen@horsleywitten.com

Additional Project Information:

Project Information

Project Name: CAPE COD GATEWAY AIRPORT
Project Location: HYANNIS, MA
Project #: 23070
Project Manager: BRYAN MASSA
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☒ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
PFAS

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
32762-01	HW-I(S)	6/7/23	1010	GW	JG		2
-02	HW-I(M)	6/7/23	1215				
-03	HW-I(D)	6/7/23	1115				
-04	HW-P(S)	6/8/23	1025				
-05	HW-P(M)	6/8/23	1148				
-06	HW-S(S)	6/9/23	1008				
-07	HW-S(M)	6/9/23	1225				

Container Type	P
Preservative	A

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	6/9/23 1337	HW FRIDGE	6/9/23 1337
HW FRIDGE	6/9 16:00		6/9 16:00
	6/9 1745		6/9 1745

0610923-1930

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

June 12, 2023

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Barnstable, MA
Client Job Number:
Project Number: [none]
Laboratory Work Order Number: 23F0282

Enclosed are results of analyses for samples as received by the laboratory on June 2, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kaitlyn A. Feliciano
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 6/12/2023

PURCHASE ORDER NUMBER:

PROJECT NUMBER: [none]

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23F0282

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
HW-R	23F0282-01	Ground Water		SOP-454 PFAS	
HW-H	23F0282-02	Ground Water		SOP-454 PFAS	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SOP-454 PFAS

Qualifications:

PF-17

Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.

Analyte & Samples(s) Qualified:

M2-6:2FTS
23F0282-01[HW-R]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:

M2-8:2FTS
S088826-CCV1

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

Perfluoro-1-hexanesulfonamide (FHxSA)
23F0282-01[HW-R], 23F0282-02[HW-H], S088826-CCV2, S088826-CCV3

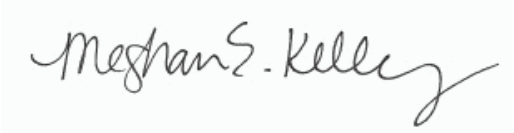
V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

Perfluorononanesulfonic acid (PFNS)
S088826-CCV1

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Barnstable, MA | Sample Description: | Work Order: 23F0282

Date Received: 6/2/2023

Field Sample #: HW-R | Sampled: 6/1/2023 10:25

Sample ID: 23F0282-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	11	1.8	0.65	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorobutanesulfonic acid (PFBS)	1.2	1.8	0.65	ng/L	1	J	SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoropentanoic acid (PFPeA)	40	1.8	0.70	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorohexanoic acid (PFHxA)	24	1.8	0.72	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.65	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.91	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.52	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.84	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorodecanoic acid (PFDA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.81	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.64	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	0.72	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.84	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.91	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.89	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.90	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.92	ng/L	1	V-05	SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorohexanesulfonic acid (PFHxS)	1.2	1.8	0.63	ng/L	1	J	SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.63	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.57	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	1.1	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluoroheptanoic acid (PFHpA)	9.9	1.8	0.74	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorooctanoic acid (PFOA)	ND	1.8	1.2	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.74	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW
Perfluorononanoic acid (PFNA)	ND	1.8	0.81	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:32	QNW

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Barnstable, MA | Sample Description: | Work Order: 23F0282

Date Received: 6/2/2023

Field Sample #: HW-H | Sampled: 6/1/2023 11:15

Sample ID: 23F0282-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.4	1.8	0.67	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoropentanoic acid (PFPeA)	8.7	1.8	0.72	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorohexanoic acid (PFHxA)	7.8	1.8	0.74	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorodecanoic acid (PFDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.83	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	0.74	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.72	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.95	ng/L	1	V-05	SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorohexanesulfonic acid (PFHxS)	0.99	1.8	0.64	ng/L	1	J	SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.64	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	1.1	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	0.69	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluoroheptanoic acid (PFHpA)	ND	1.8	0.76	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorooctanoic acid (PFOA)	ND	1.8	1.2	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW
Perfluorononanoic acid (PFNA)	ND	1.8	0.83	ng/L	1		SOP-454 PFAS	6/6/23	6/8/23 16:39	QNW

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Sample Extraction Data

Prep Method:SOP 454-PFAAS **Analytical Method:SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23F0282-01 [HW-R]	B342148	285	1.00	06/06/23
23F0282-02 [HW-H]	B342148	277	1.00	06/06/23

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342148 - SOP 454-PFAAS										
Blank (B342148-BLK1)				Prepared: 06/06/23 Analyzed: 06/08/23						
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L							
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L							
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L							
LCS (B342148-BS1)				Prepared: 06/06/23 Analyzed: 06/08/23						
Perfluorobutanoic acid (PFBA)	8.65	1.9	ng/L	9.69		89.2	73-129			
Perfluorobutanesulfonic acid (PFBS)	7.63	1.9	ng/L	8.58		89.0	72-130			
Perfluoropentanoic acid (PFPeA)	8.25	1.9	ng/L	9.69		85.2	72-129			
Perfluorohexanoic acid (PFHxA)	8.47	1.9	ng/L	9.69		87.4	72-129			
11Cl-PF3OUdS (F53B Major)	7.82	1.9	ng/L	9.13		85.6	55.1-141			
9Cl-PF3ONS (F53B Minor)	7.64	1.9	ng/L	9.03		84.6	59.6-146			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.70	1.9	ng/L	9.13		84.3	60.3-131			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6.38	1.9	ng/L	9.69		65.9	37.6-167			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.08	1.9	ng/L	9.30		97.6	67-138			
Perfluorodecanoic acid (PFDA)	8.65	1.9	ng/L	9.69		89.2	71-129			
Perfluorododecanoic acid (PFDoA)	8.69	1.9	ng/L	9.69		89.7	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	7.44	1.9	ng/L	8.62		86.2	49.4-154			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342148 - SOP 454-PFAAS										
LCS (B342148-BS1)				Prepared: 06/06/23 Analyzed: 06/08/23						
Perfluoroheptanesulfonic acid (PFHpS)	8.52	1.9	ng/L	9.25		92.1	69-134			
N-EtFOSAA (NEtFOSAA)	8.19	1.9	ng/L	9.69		84.5	61-135			
N-MeFOSAA (NMeFOSAA)	9.28	1.9	ng/L	9.69		95.8	65-136			
Perfluorotetradecanoic acid (PFTA)	7.93	1.9	ng/L	9.69		81.8	71-132			
Perfluorotridecanoic acid (PFTrDA)	9.53	1.9	ng/L	9.69		98.3	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.02	1.9	ng/L	9.06		88.5	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.74	1.9	ng/L	9.35		82.8	53-142			
Perfluorooctanesulfonamide (FOSA)	8.90	1.9	ng/L	9.69		91.8	67-137			
Perfluorononanesulfonic acid (PFNS)	8.23	1.9	ng/L	9.30		88.5	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	6.33	1.9	ng/L	9.69		65.3	61.7-156			
Perfluoro-1-butanesulfonamide (FBSA)	7.08	1.9	ng/L	9.69		73.1	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	7.43	1.9	ng/L	8.87		83.8	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	8.24	1.9	ng/L	9.69		85.0	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	8.39	1.9	ng/L	9.69		86.5	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	6.87	1.9	ng/L	9.21		74.6	64-140			
Perfluoropentanesulfonic acid (PFPeS)	7.65	1.9	ng/L	9.11		83.9	71-127			
Perfluoroundecanoic acid (PFUnA)	8.84	1.9	ng/L	9.69		91.2	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	7.93	1.9	ng/L	9.69		81.9	58.5-143			
Perfluoroheptanoic acid (PFHpA)	8.81	1.9	ng/L	9.69		90.9	72-130			
Perfluorooctanoic acid (PFOA)	8.75	1.9	ng/L	9.69		90.3	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.58	1.9	ng/L	8.96		95.7	65-140			
Perfluorononanoic acid (PFNA)	6.96	1.9	ng/L	9.69		71.8	69-130			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
S-29	Extracted Internal Standard is outside of control limits.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-R (23F0282-01)			Lab File ID: 23F0282-01.d			Analyzed: 06/08/23 16:32			
M8FOSA	211001.6	3.9486	268,784.00	3.9486	79	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	51181.51	2.4228	35,452.00	2.431017	144	50 - 150	-0.0082	+/-0.50	
M2PFTA	323478.5	4.248767	469,922.00	4.248767	69	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	85345.59	3.731083	77,186.00	3.731083	111	50 - 150	0.0000	+/-0.50	
MPFBA	144999.8	1.033533	277,346.00	1.033533	52	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	120862.5	2.76565	130,159.00	2.773833	93	50 - 150	-0.0082	+/-0.50	
M6PFDA	446925.3	3.739567	574,846.00	3.739567	78	50 - 150	0.0000	+/-0.50	
M3PFBS	118083.4	1.83695	127,381.00	1.83695	93	50 - 150	0.0000	+/-0.50	
M7PFUnA	404686.3	3.873917	481,877.00	3.8819	84	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	49683.5	3.3883	28,494.00	3.3883	174	50 - 150	0.0000	+/-0.50	*
M5PFPeA	228695.3	1.6652	278,521.00	1.6652	82	50 - 150	0.0000	+/-0.50	
M5PFHxA	418491.7	2.506633	467,599.00	2.51485	89	50 - 150	-0.0082	+/-0.50	
M3PFHxS	77013.32	3.153433	82,162.00	3.153433	94	50 - 150	0.0000	+/-0.50	
M4PFHpA	434091.8	3.113417	483,204.00	3.122333	90	50 - 150	-0.0089	+/-0.50	
M8PFOA	477298.3	3.397017	521,324.00	3.397017	92	50 - 150	0.0000	+/-0.50	
M8PFOS	74349.38	3.588267	77,713.00	3.588267	96	50 - 150	0.0000	+/-0.50	
M9PFNA	455007.4	3.589317	532,218.00	3.589317	85	50 - 150	0.0000	+/-0.50	
MPFDoA	322093.3	4.0087	390,006.00	4.0167	83	50 - 150	-0.0080	+/-0.50	
D5-NEtFOSAA	83401.87	3.881417	132,373.00	3.8894	63	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	93401.98	3.809467	140,897.00	3.809467	66	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-H (23F0282-02)			Lab File ID: 23F0282-02.d			Analyzed: 06/08/23 16:39			
M8FOSA	191588.9	3.9486	268,784.00	3.9486	71	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	41657.39	2.4228	35,452.00	2.431017	118	50 - 150	-0.0082	+/-0.50	
M2PFTA	359161.1	4.248767	469,922.00	4.248767	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	52997.11	3.731083	77,186.00	3.731083	69	50 - 150	0.0000	+/-0.50	
MPFBA	162831.8	1.033533	277,346.00	1.033533	59	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	113603.7	2.76565	130,159.00	2.773833	87	50 - 150	-0.0082	+/-0.50	
M6PFDA	395469.9	3.7316	574,846.00	3.739567	69	50 - 150	-0.0080	+/-0.50	
M3PFBS	110653.7	1.828667	127,381.00	1.83695	87	50 - 150	-0.0083	+/-0.50	
M7PFUnA	386337.7	3.873917	481,877.00	3.8819	80	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	37707.73	3.380233	28,494.00	3.3883	132	50 - 150	-0.0081	+/-0.50	
M5PFPeA	213186.3	1.6652	278,521.00	1.6652	77	50 - 150	0.0000	+/-0.50	
M5PFHxA	380034.9	2.506633	467,599.00	2.51485	81	50 - 150	-0.0082	+/-0.50	
M3PFHxS	69730.17	3.153433	82,162.00	3.153433	85	50 - 150	0.0000	+/-0.50	
M4PFHpA	396611.2	3.113417	483,204.00	3.122333	82	50 - 150	-0.0089	+/-0.50	
M8PFOA	449884.9	3.397017	521,324.00	3.397017	86	50 - 150	0.0000	+/-0.50	
M8PFOS	65539.32	3.588267	77,713.00	3.588267	84	50 - 150	0.0000	+/-0.50	
M9PFNA	439632.2	3.581317	532,218.00	3.589317	83	50 - 150	-0.0080	+/-0.50	
MPFDoA	307125.2	4.0087	390,006.00	4.0167	79	50 - 150	-0.0080	+/-0.50	
D5-NEtFOSAA	91506.02	3.881417	132,373.00	3.8894	69	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	95647.33	3.809467	140,897.00	3.809467	68	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B342148-BLK1)			Lab File ID: B342148-BLK1.d			Analyzed: 06/08/23 14:21			
M8FOSA	256694.9	3.9486	268,784.00	3.9486	96	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	41506.67	2.439333	35,452.00	2.431017	117	50 - 150	0.0083	+/-0.50	
M2PFTA	423753.3	4.256834	469,922.00	4.256834	90	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	87081.41	3.73905	77,186.00	3.73905	113	50 - 150	0.0000	+/-0.50	
MPFBA	287826	1.04185	277,346.00	1.033533	104	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	129662.1	2.782017	130,159.00	2.782017	100	50 - 150	0.0000	+/-0.50	
M6PFDA	523699.6	3.739567	574,846.00	3.739567	91	50 - 150	0.0000	+/-0.50	
M3PFBS	136324.6	1.845233	127,381.00	1.845233	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	443994.6	3.8819	481,877.00	3.8819	92	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	34461.97	3.3883	28,494.00	3.3883	121	50 - 150	0.0000	+/-0.50	
M5PFPeA	299746.4	1.681733	278,521.00	1.673467	108	50 - 150	0.0083	+/-0.50	
M5PFHxA	503753.3	2.523067	467,599.00	2.523067	108	50 - 150	0.0000	+/-0.50	
M3PFHxS	83166.31	3.1615	82,162.00	3.153433	101	50 - 150	0.0081	+/-0.50	
M4PFHpA	514162.8	3.122317	483,204.00	3.122317	106	50 - 150	0.0000	+/-0.50	
M8PFOA	581790.5	3.405067	521,324.00	3.405067	112	50 - 150	0.0000	+/-0.50	
M8PFOS	71865.37	3.588267	77,713.00	3.588267	92	50 - 150	0.0000	+/-0.50	
M9PFNA	565916	3.5893	532,218.00	3.589317	106	50 - 150	0.0000	+/-0.50	
MPFDoA	361185.8	4.0167	390,006.00	4.0167	93	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	118862.9	3.8894	132,373.00	3.8894	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	130121.6	3.817433	140,897.00	3.809467	92	50 - 150	0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B342148-BS1)			Lab File ID: B342148-BS1.d			Analyzed: 06/08/23 14:13			
M8FOSA	255406.9	3.9486	268,784.00	3.9486	95	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	40160.35	2.439333	35,452.00	2.431017	113	50 - 150	0.0083	+/-0.50	
M2PFTA	458516.6	4.256834	469,922.00	4.256834	98	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	78121.29	3.73905	77,186.00	3.73905	101	50 - 150	0.0000	+/-0.50	
MPFBA	279092.3	1.04185	277,346.00	1.033533	101	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	135231.3	2.782017	130,159.00	2.782017	104	50 - 150	0.0000	+/-0.50	
M6PFDA	569540.6	3.739567	574,846.00	3.739567	99	50 - 150	0.0000	+/-0.50	
M3PFBS	132695.9	1.845233	127,381.00	1.845233	104	50 - 150	0.0000	+/-0.50	
M7PFUnA	460832.9	3.8819	481,877.00	3.8819	96	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	35179.05	3.3883	28,494.00	3.3883	123	50 - 150	0.0000	+/-0.50	
M5PFPeA	286399.5	1.681733	278,521.00	1.673467	103	50 - 150	0.0083	+/-0.50	
M5PFHxA	486166.7	2.523067	467,599.00	2.523067	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	83622.95	3.1615	82,162.00	3.153433	102	50 - 150	0.0081	+/-0.50	
M4PFHpA	503771.8	3.122317	483,204.00	3.122317	104	50 - 150	0.0000	+/-0.50	
M8PFOA	555438.6	3.405067	521,324.00	3.405067	107	50 - 150	0.0000	+/-0.50	
M8PFOS	75263.58	3.588267	77,713.00	3.588267	97	50 - 150	0.0000	+/-0.50	
M9PFNA	560333.3	3.589317	532,218.00	3.589317	105	50 - 150	0.0000	+/-0.50	
MPFDoA	391526.1	4.0167	390,006.00	4.0167	100	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	124139.9	3.8894	132,373.00	3.8894	94	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	135218.1	3.817433	140,897.00	3.809467	96	50 - 150	0.0080	+/-0.50	

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SOP-454 PFAS in Water	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA (NEtFOSAA)	NH-P
N-MeFOSAA (NMeFOSAA)	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanesulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2023

23F0278 KAF

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 1

Company Name:	Horsley Witten Group
Address:	90 Route 6A Sandwich, MA
Phone:	508-833-6600
Project Name:	HYA
Project Location:	Hyannis
Project Number:	
Project Manager:	Bryan Massa
Pace Quote Name/Number:	
Invoice Recipient:	
Sampled By:	Caroline Armstrong

Requested Turnaround Time
7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☑ Due Date:

Rush: Approval Required
1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery
Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To: bmassa@horsleywitten.com
Fax To #:

Dissolved Metals Samples
○ Field Filtered
○ Lab to Filter

Orthophosphate Samples
○ Field Filtered
○ Lab to Filter

PCB ONLY
SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

PFAS (isotope dilution)

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE
a	HW-R	6/1/23	10:25	G	GW				2		
b	HW-H	6/1/23	11:15	G	GW				2		

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] **Matrix Codes:**
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] **Preservation Codes:**
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:	6/2/23 10:30
Received by: (signature)	Date/Time:	6/2/23 1030
Relinquished by: (signature)	Date/Time:	6/2/23 1800
Received by: (signature)	Date/Time:	6/2/23 1806
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Client Comments: MCP GW-1

Detection Limit Requirements
MA: GW-1
GT:
Other:

Special Requirements
☒ MA MCP Required
☐ MCP Certification Form Required
☐ CT RCP Required
☐ RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity
Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other
☐ Chromatogram
☐ *AIHA-LAP,LLC*

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

Table of Contents

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Log In Back-Sheet

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

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Client: Horsley Witten
Project: HYA PFAS Monitoring
MCP/RCP Required: MA-MCP
Deliverable Package Req.: GW-1
Location: Hyannis, MA
PWSID# (When Applicable): nb
Arrival Method:
Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐
Received By / Date / Time: Mem 6/2/23 1806
Back-Sheet By / Date / Time: Mem 6/2/23 1821
Temperature Method: Gun # 5
Temp ☑ < 6° C Actual Temperature: 2.3
Rush Samples: Yes / No Notify: No
Short Hold: Yes / No Notify: No

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
Is there enough Volume	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☐	☑
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)
Client ☑ Analysis ☑ Sampler Name ☑
Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Container (Circle when applicable)	UnP	HCl	HNO3	H2SO4	NaOH	Trizma	NaS2O3	Other Preservative
1L Amber Plastic								
500 mL Amber Plastic								
250 mL Amber (Plastic)	4							
Other Amber Clear Plastic								
16oz Amber Clear								
8oz Amber Clear								
4oz Amber Clear								
2oz Amber Clear								
Col/Bacteria								
Flashpoint								
Plastic Bag								
SOC Kit								
Perchlorate								
Encore								
Frozen								

	Proper Headspace	UnP	HCl	MeOH	Bisulfate	DI	Thiosulfate	Sulfuric	Other
Vials									

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June 20, 2023

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 22071
Laboratory Work Order Number: 23E3794

Enclosed are results of analyses for samples as received by the laboratory on May 30, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kaitlyn A. Feliciano
Project Manager

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Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 6/20/2023

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 22071

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23E3794

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
ME-1	23E3794-01	Ground Water		SOP-454 PFAS	
ME-2	23E3794-02	Ground Water		SOP-454 PFAS	
ME-3	23E3794-03	Ground Water		SOP-454 PFAS	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SOP-454 PFAS

Qualifications:

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:

Perfluoroheptanesulfonic acid (PFHpS)
23E3794-01RE1[ME-1], 23E3794-02RE1[ME-2], 23E3794-03RE1[ME-3], B342713-BSD1

S-29

Extracted Internal Standard is outside of control limits.

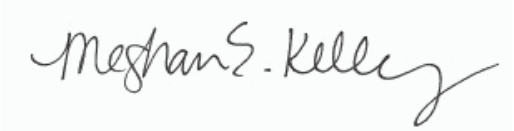
Analyte & Samples(s) Qualified:

M2-6:2FTS
23E3794-01RE1[ME-1]

M2-8:2FTS
S088753-CCV1

M8FOSA
23E3794-02RE1[ME-2]

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Hyannis, MA | Sample Description: | Work Order: 23E3794

Date Received: 5/30/2023

Field Sample #: ME-1 | Sampled: 5/26/2023 08:45

Sample ID: 23E3794-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	19	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorobutanesulfonic acid (PFBS)	2.5	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoropentanoic acid (PFPeA)	60	1.8	0.72	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorohexanoic acid (PFHxA)	38	1.8	0.74	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.87	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorodecanoic acid (PFDA)	0.83	1.8	0.75	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.84	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.0	1.8	0.74	ng/L	1	L-07	SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.3	1.8	0.71	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorohexanesulfonic acid (PFHxS)	29	1.8	0.65	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.65	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	43	1.8	1.1	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.4	1.8	0.69	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoroheptanoic acid (PFHpA)	18	1.8	0.76	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorooctanoic acid (PFOA)	18	1.8	1.2	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorooctanesulfonic acid (PFOS)	69	1.8	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorononanoic acid (PFNA)	11	1.8	0.84	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW

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Project Location: Hyannis, MA | Sample Description: | Work Order: 23E3794

Date Received: 5/30/2023

Field Sample #: ME-2 | Sampled: 5/26/2023 08:55

Sample ID: 23E3794-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	16	1.9	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorobutanesulfonic acid (PFBS)	4.2	1.9	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoropentanoic acid (PFPeA)	54	1.9	0.75	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorohexanoic acid (PFHxA)	40	1.9	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.56	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	5.7	1.9	0.90	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorodecanoic acid (PFDA)	ND	1.9	0.79	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.87	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.69	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.4	1.9	0.77	ng/L	1	L-07	SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.76	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.99	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.90	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.78	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.96	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.97	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	1.0	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.7	1.9	0.74	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorohexanesulfonic acid (PFHxS)	44	1.9	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	45	1.9	1.1	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoropentanesulfonic acid (PFPeS)	3.6	1.9	0.72	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.81	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoroheptanoic acid (PFHpA)	17	1.9	0.80	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorooctanoic acid (PFOA)	17	1.9	1.3	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorooctanesulfonic acid (PFOS)	65	1.9	0.80	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorononanoic acid (PFNA)	6.7	1.9	0.87	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW

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Project Location: Hyannis, MA | Sample Description: | Work Order: 23E3794

Date Received: 5/30/2023

Field Sample #: ME-3 | Sampled: 5/26/2023 08:50

Sample ID: 23E3794-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	8.2	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorobutanesulfonic acid (PFBS)	1.7	1.8	0.66	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoropentanoic acid (PFPeA)	23	1.8	0.71	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorohexanoic acid (PFHxA)	18	1.8	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorodecanoic acid (PFDA)	ND	1.8	0.74	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.83	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.2	1.8	0.73	ng/L	1	L-07	SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.72	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.85	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.74	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.69	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorooctanesulfonamide (FOSA)	11	1.8	0.91	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	1.9	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-1-butanesulfonamide (FBSA)	0.91	1.8	0.70	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorohexanesulfonic acid (PFHxS)	34	1.8	0.64	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.64	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.58	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.7	1.8	1.1	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.1	1.8	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoroheptanoic acid (PFHpA)	8.6	1.8	0.75	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorooctanoic acid (PFOA)	14	1.8	1.2	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorooctanesulfonic acid (PFOS)	83	1.8	0.76	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorononanoic acid (PFNA)	6.1	1.8	0.83	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW

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Sample Extraction Data

Prep Method:SOP 454-PFAAS **Analytical Method:SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23E3794-01RE1 [ME-1]	B342713	276	1.00	06/13/23
23E3794-02RE1 [ME-2]	B342713	264	1.00	06/13/23
23E3794-03RE1 [ME-3]	B342713	279	1.00	06/13/23

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342713 - SOP 454-PFAAS										
Blank (B342713-BLK1)				Prepared: 06/13/23 Analyzed: 06/15/23						
Perfluorobutanoic acid (PFBA)	ND	2.1	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.1	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.1	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.1	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.1	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.1	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.1	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.1	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.1	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	2.1	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	2.1	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.1	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.1	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.1	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.1	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.1	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.1	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.1	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.1	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.1	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.1	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.1	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.1	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.1	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.1	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.1	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.1	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.1	ng/L							
LCS (B342713-BS1)				Prepared: 06/13/23 Analyzed: 06/15/23						
Perfluorobutanoic acid (PFBA)	10.3	2.0	ng/L	10.2		102	73-129			
Perfluorobutanesulfonic acid (PFBS)	9.03	2.0	ng/L	8.99		100	72-130			
Perfluoropentanoic acid (PFPeA)	10.3	2.0	ng/L	10.2		101	72-129			
Perfluorohexanoic acid (PFHxA)	10.5	2.0	ng/L	10.2		103	72-129			
11Cl-PF3OUdS (F53B Major)	9.20	2.0	ng/L	9.57		96.1	55.1-141			
9Cl-PF3ONS (F53B Minor)	8.88	2.0	ng/L	9.47		93.7	59.6-146			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.47	2.0	ng/L	9.57		99.0	60.3-131			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.74	2.0	ng/L	10.2		95.9	37.6-167			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.64	2.0	ng/L	9.75		98.8	67-138			
Perfluorodecanoic acid (PFDA)	10.6	2.0	ng/L	10.2		104	71-129			
Perfluorododecanoic acid (PFDoA)	11.9	2.0	ng/L	10.2		117	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	8.89	2.0	ng/L	9.04		98.4	49.4-154			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B342713 - SOP 454-PFAAS											
LCS (B342713-BS1)				Prepared: 06/13/23 Analyzed: 06/15/23							
Perfluoroheptanesulfonic acid (PFHpS)	10.5	2.0	ng/L	9.70		108		69-134			
N-EtFOSAA (NEtFOSAA)	11.4	2.0	ng/L	10.2		112		61-135			
N-MeFOSAA (NMeFOSAA)	11.9	2.0	ng/L	10.2		117		65-136			
Perfluorotetradecanoic acid (PFTA)	10.7	2.0	ng/L	10.2		105		71-132			
Perfluorotridecanoic acid (PFTrDA)	11.7	2.0	ng/L	10.2		115		65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.63	2.0	ng/L	9.50		101		63-143			
Perfluorodecanesulfonic acid (PFDS)	7.82	2.0	ng/L	9.80		79.7		53-142			
Perfluorooctanesulfonamide (FOSA)	10.8	2.0	ng/L	10.2		107		67-137			
Perfluorononanesulfonic acid (PFNS)	8.87	2.0	ng/L	9.75		90.9		69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	9.25	2.0	ng/L	10.2		91.1		61.7-156			
Perfluoro-1-butanesulfonamide (FBSA)	9.18	2.0	ng/L	10.2		90.4		61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.78	2.0	ng/L	9.30		94.4		68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.4	2.0	ng/L	10.2		103		59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.0	2.0	ng/L	10.2		98.8		59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.6	2.0	ng/L	9.65		110		64-140			
Perfluoropentanesulfonic acid (PFPeS)	9.72	2.0	ng/L	9.55		102		71-127			
Perfluoroundecanoic acid (PFUnA)	10.2	2.0	ng/L	10.2		100		69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	11.3	2.0	ng/L	10.2		111		58.5-143			
Perfluoroheptanoic acid (PFHpA)	10.4	2.0	ng/L	10.2		103		72-130			
Perfluorooctanoic acid (PFOA)	10.7	2.0	ng/L	10.2		105		71-133			
Perfluorooctanesulfonic acid (PFOS)	9.66	2.0	ng/L	9.40		103		65-140			
Perfluorononanoic acid (PFNA)	10.1	2.0	ng/L	10.2		99.7		69-130			
LCS Dup (B342713-BSD1)				Prepared: 06/13/23 Analyzed: 06/15/23							
Perfluorobutanoic acid (PFBA)	11.4	2.1	ng/L	10.5		109		73-129	9.93	30	
Perfluorobutanesulfonic acid (PFBS)	10.2	2.1	ng/L	9.26		110		72-130	12.3	30	
Perfluoropentanoic acid (PFPeA)	11.5	2.1	ng/L	10.5		109		72-129	10.8	30	
Perfluorohexanoic acid (PFHxA)	11.5	2.1	ng/L	10.5		110		72-129	9.29	30	
11Cl-PF3OUdS (F53B Major)	9.22	2.1	ng/L	9.86		93.5		55.1-141	0.252	30	
9Cl-PF3ONS (F53B Minor)	10.2	2.1	ng/L	9.76		105		59.6-146	13.9	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	10.5	2.1	ng/L	9.86		107		60.3-131	10.5	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.16	2.1	ng/L	10.5		87.6		37.6-167	6.15	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	12.6	2.1	ng/L	10.0		125		67-138	26.6	30	
Perfluorodecanoic acid (PFDA)	11.3	2.1	ng/L	10.5		108		71-129	6.41	30	
Perfluorododecanoic acid (PFDoA)	11.4	2.1	ng/L	10.5		109		72-134	3.79	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	10.1	2.1	ng/L	9.32		108		49.4-154	12.3	30	
Perfluoroheptanesulfonic acid (PFHpS)	13.6	2.1	ng/L	10.0		**137**	*	69-134	26.4	30	L-07
N-EtFOSAA (NEtFOSAA)	12.3	2.1	ng/L	10.5		118		61-135	7.96	30	
N-MeFOSAA (NMeFOSAA)	12.9	2.1	ng/L	10.5		123		65-136	7.82	30	
Perfluorotetradecanoic acid (PFTA)	11.6	2.1	ng/L	10.5		111		71-132	8.45	30	
Perfluorotridecanoic acid (PFTrDA)	11.5	2.1	ng/L	10.5		110		65-144	1.59	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.3	2.1	ng/L	9.79		106		63-143	7.08	30	
Perfluorodecanesulfonic acid (PFDS)	8.99	2.1	ng/L	10.1		89.0		53-142	14.0	30	
Perfluorooctanesulfonamide (FOSA)	11.6	2.1	ng/L	10.5		111		67-137	6.57	30	
Perfluorononanesulfonic acid (PFNS)	11.5	2.1	ng/L	10.0		115		69-127	25.9	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	10.6	2.1	ng/L	10.5		101		61.7-156	13.3	30	
Perfluoro-1-butanesulfonamide (FBSA)	10.7	2.1	ng/L	10.5		102		61.3-145	15.0	30	
Perfluorohexanesulfonic acid (PFHxS)	10.5	2.1	ng/L	9.58		109		68-131	17.6	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	11.7	2.1	ng/L	10.5		111		59.8-147	11.2	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	11.3	2.1	ng/L	10.5		108		59.5-146	12.3	30	

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342713 - SOP 454-PFAAS										
LCS Dup (B342713-BSD1)				Prepared: 06/13/23 Analyzed: 06/15/23						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.81	2.1	ng/L	9.94		98.6	64-140	8.13	30	
Perfluoropentanesulfonic acid (PFPeS)	11.0	2.1	ng/L	9.84		112	71-127	12.7	30	
Perfluoroundecanoic acid (PFUnA)	11.4	2.1	ng/L	10.5		109	69-133	11.4	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	12.4	2.1	ng/L	10.5		119	58.5-143	9.68	30	
Perfluoroheptanoic acid (PFHpA)	11.1	2.1	ng/L	10.5		106	72-130	5.87	30	
Perfluorooctanoic acid (PFOA)	11.2	2.1	ng/L	10.5		107	71-133	4.69	30	
Perfluorooctanesulfonic acid (PFOS)	11.1	2.1	ng/L	9.68		114	65-140	13.7	30	
Perfluorononanoic acid (PFNA)	11.3	2.1	ng/L	10.5		108	69-130	11.0	30	

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
S-29	Extracted Internal Standard is outside of control limits.

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-1 (23E3794-01RE1)			Lab File ID: 23E3794-01RE1.d			Analyzed: 06/15/23 16:52			
M8FOSA	213334.6	3.980567	227,522.00	3.980567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	28486.3	2.562517	27,028.00	2.562517	105	50 - 150	0.0000	+/-0.50	
M2PFTA	355459	4.329667	479,880.00	4.329667	74	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	37332.14	3.794817	33,212.00	3.802783	112	50 - 150	-0.0080	+/-0.50	
MPFBA	231042	1.066783	256,957.00	1.058467	90	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	102523.9	2.880217	114,902.00	2.880217	89	50 - 150	0.0000	+/-0.50	
M6PFDA	449810.7	3.795333	445,919.00	3.795333	101	50 - 150	0.0000	+/-0.50	
M3PFBS	110999.1	1.944683	104,197.00	1.9364	107	50 - 150	0.0083	+/-0.50	
M7PFUnA	450689.3	3.946033	453,308.00	3.946017	99	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	43785.91	3.445283	27,565.00	3.445283	159	50 - 150	0.0000	+/-0.50	*
M5PFPeA	271434.3	1.757717	276,869.00	1.757717	98	50 - 150	0.0000	+/-0.50	
M5PFHxA	467718.8	2.655	458,596.00	2.646767	102	50 - 150	0.0082	+/-0.50	
M3PFHxS	77050.47	3.218333	68,806.00	3.218333	112	50 - 150	0.0000	+/-0.50	
M4PFHpA	500292.4	3.186933	461,168.00	3.186933	108	50 - 150	0.0000	+/-0.50	
M8PFOA	548914.8	3.453817	508,809.00	3.453817	108	50 - 150	0.0000	+/-0.50	
M8PFOS	76850.11	3.636183	76,995.00	3.636183	100	50 - 150	0.0000	+/-0.50	
M9PFNA	512879.3	3.637217	526,406.00	3.637217	97	50 - 150	0.0000	+/-0.50	
MPFDoA	361032.2	4.088634	386,713.00	4.088634	93	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	91828.38	3.9535	101,789.00	3.9535	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	107819.7	3.873767	116,586.00	3.873767	92	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-2 (23E3794-02RE1)			Lab File ID: 23E3794-02RE1.d			Analyzed: 06/15/23 16:59			
M8FOSA	63430.73	3.980567	227,522.00	3.980567	28	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	24893.35	2.562517	27,028.00	2.562517	92	50 - 150	0.0000	+/-0.50	
M2PFTA	364628.1	4.329667	479,880.00	4.329667	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	31018.9	3.794817	33,212.00	3.802783	93	50 - 150	-0.0080	+/-0.50	
MPFBA	216959.8	1.058467	256,957.00	1.058467	84	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98515.74	2.880217	114,902.00	2.880217	86	50 - 150	0.0000	+/-0.50	
M6PFDA	380677.3	3.795333	445,919.00	3.795333	85	50 - 150	0.0000	+/-0.50	
M3PFBS	99833.68	1.9364	104,197.00	1.9364	96	50 - 150	0.0000	+/-0.50	
M7PFUnA	358386.6	3.946033	453,308.00	3.946017	79	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	37812.95	3.437283	27,565.00	3.445283	137	50 - 150	-0.0080	+/-0.50	
M5PFPeA	250487.6	1.757717	276,869.00	1.757717	90	50 - 150	0.0000	+/-0.50	
M5PFHxA	423755.1	2.655	458,596.00	2.646767	92	50 - 150	0.0082	+/-0.50	
M3PFHxS	69592.15	3.218333	68,806.00	3.218333	101	50 - 150	0.0000	+/-0.50	
M4PFHpA	456410.2	3.186933	461,168.00	3.186933	99	50 - 150	0.0000	+/-0.50	
M8PFOA	478276.5	3.453817	508,809.00	3.453817	94	50 - 150	0.0000	+/-0.50	
M8PFOS	68816.74	3.636183	76,995.00	3.636183	89	50 - 150	0.0000	+/-0.50	
M9PFNA	474013.9	3.637217	526,406.00	3.637217	90	50 - 150	0.0000	+/-0.50	
MPFDoA	295467.7	4.088634	386,713.00	4.088634	76	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	71346.97	3.9535	101,789.00	3.9535	70	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	82685.68	3.873767	116,586.00	3.873767	71	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-3 (23E3794-03RE1)			Lab File ID: 23E3794-03RE1.d			Analyzed: 06/15/23 17:06			
M8FOSA	166835.3	3.980567	227,522.00	3.980567	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	24394.43	2.562517	27,028.00	2.562517	90	50 - 150	0.0000	+/-0.50	
M2PFTA	343507.3	4.329667	479,880.00	4.329667	72	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	29683.95	3.794817	33,212.00	3.802783	89	50 - 150	-0.0080	+/-0.50	
MPFBA	199579.7	1.066783	256,957.00	1.058467	78	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	95104.96	2.880217	114,902.00	2.880217	83	50 - 150	0.0000	+/-0.50	
M6PFDA	375022.2	3.795333	445,919.00	3.795333	84	50 - 150	0.0000	+/-0.50	
M3PFBS	92953.21	1.9364	104,197.00	1.9364	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	351270.3	3.946033	453,308.00	3.946017	77	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	31350.92	3.437283	27,565.00	3.445283	114	50 - 150	-0.0080	+/-0.50	
M5PFPeA	231561.3	1.757717	276,869.00	1.757717	84	50 - 150	0.0000	+/-0.50	
M5PFHxA	392931.2	2.646767	458,596.00	2.646767	86	50 - 150	0.0000	+/-0.50	
M3PFHxS	64172.11	3.218333	68,806.00	3.218333	93	50 - 150	0.0000	+/-0.50	
M4PFHpA	411807.9	3.186933	461,168.00	3.186933	89	50 - 150	0.0000	+/-0.50	
M8PFOA	450823.7	3.453817	508,809.00	3.453817	89	50 - 150	0.0000	+/-0.50	
M8PFOS	64565.88	3.636183	76,995.00	3.636183	84	50 - 150	0.0000	+/-0.50	
M9PFNA	438212.4	3.637217	526,406.00	3.637217	83	50 - 150	0.0000	+/-0.50	
MPFDoA	287448.7	4.088634	386,713.00	4.088634	74	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	80767.51	3.9535	101,789.00	3.9535	79	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	82407.26	3.873767	116,586.00	3.873767	71	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B342713-BLK1)			Lab File ID: B342713-BLK1.d			Analyzed: 06/15/23 16:01			
M8FOSA	196862.9	3.980567	227,522.00	3.980567	87	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	26152.61	2.562517	27,028.00	2.562517	97	50 - 150	0.0000	+/-0.50	
M2PFTA	427562.6	4.337783	479,880.00	4.329667	89	50 - 150	0.0081	+/-0.50	
M2-8:2FTS	29892	3.794817	33,212.00	3.802783	90	50 - 150	-0.0080	+/-0.50	
MPFBA	249440.2	1.058467	256,957.00	1.058467	97	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	94002.9	2.880217	114,902.00	2.880217	82	50 - 150	0.0000	+/-0.50	
M6PFDA	409812.8	3.795333	445,919.00	3.795333	92	50 - 150	0.0000	+/-0.50	
M3PFBS	105955.5	1.944683	104,197.00	1.9364	102	50 - 150	0.0083	+/-0.50	
M7PFUnA	426348.8	3.946017	453,308.00	3.946017	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	26142.75	3.437283	27,565.00	3.445283	95	50 - 150	-0.0080	+/-0.50	
M5PFPeA	274971.8	1.757717	276,869.00	1.757717	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	449201.1	2.655	458,596.00	2.646767	98	50 - 150	0.0082	+/-0.50	
M3PFHxS	65679.15	3.218333	68,806.00	3.218333	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	468079.8	3.186933	461,168.00	3.186933	101	50 - 150	0.0000	+/-0.50	
M8PFOA	511877	3.453817	508,809.00	3.453817	101	50 - 150	0.0000	+/-0.50	
M8PFOS	68250.95	3.636183	76,995.00	3.636183	89	50 - 150	0.0000	+/-0.50	
M9PFNA	486195.3	3.637217	526,406.00	3.637217	92	50 - 150	0.0000	+/-0.50	
MPFDoA	361203.5	4.088634	386,713.00	4.088634	93	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	91567.28	3.9535	101,789.00	3.9535	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	109350.9	3.873767	116,586.00	3.873767	94	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B342713-BS1)			Lab File ID: B342713-BS1.d			Analyzed: 06/15/23 15:47			
M8FOSA	177957.5	3.980567	227,522.00	3.980567	78	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	29196.96	2.562517	27,028.00	2.562517	108	50 - 150	0.0000	+/-0.50	
M2PFTA	408424.1	4.329667	479,880.00	4.329667	85	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	28086.29	3.794817	33,212.00	3.802783	85	50 - 150	-0.0080	+/-0.50	
MPFBA	252572.1	1.058467	256,957.00	1.058467	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	97688.41	2.880217	114,902.00	2.880217	85	50 - 150	0.0000	+/-0.50	
M6PFDA	395000.1	3.795333	445,919.00	3.795333	89	50 - 150	0.0000	+/-0.50	
M3PFBS	107557.4	1.944683	104,197.00	1.9364	103	50 - 150	0.0083	+/-0.50	
M7PFUnA	394744.1	3.946033	453,308.00	3.946017	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	28605.05	3.437283	27,565.00	3.445283	104	50 - 150	-0.0080	+/-0.50	
M5PFPeA	274098.7	1.757717	276,869.00	1.757717	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	460367.3	2.655	458,596.00	2.646767	100	50 - 150	0.0082	+/-0.50	
M3PFHxS	71050.67	3.218333	68,806.00	3.218333	103	50 - 150	0.0000	+/-0.50	
M4PFHpA	467747.6	3.186933	461,168.00	3.186933	101	50 - 150	0.0000	+/-0.50	
M8PFOA	513461.1	3.453817	508,809.00	3.453817	101	50 - 150	0.0000	+/-0.50	
M8PFOS	69476.79	3.636183	76,995.00	3.636183	90	50 - 150	0.0000	+/-0.50	
M9PFNA	496207.2	3.637217	526,406.00	3.637217	94	50 - 150	0.0000	+/-0.50	
MPFDoA	315758.9	4.088634	386,713.00	4.088634	82	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	89045.16	3.9535	101,789.00	3.9535	87	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	94363.59	3.873767	116,586.00	3.873767	81	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B342713-BSD1)			Lab File ID: B342713-BSD1.d			Analyzed: 06/15/23 15:54			
M8FOSA	220138.8	3.980567	227,522.00	3.980567	97	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	32367.33	2.562517	27,028.00	2.562517	120	50 - 150	0.0000	+/-0.50	
M2PFTA	441651.6	4.329667	479,880.00	4.329667	92	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	31301.99	3.794817	33,212.00	3.802783	94	50 - 150	-0.0080	+/-0.50	
MPFBA	272321.5	1.058467	256,957.00	1.058467	106	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	118835	2.880217	114,902.00	2.880217	103	50 - 150	0.0000	+/-0.50	
M6PFDA	437059.7	3.795333	445,919.00	3.795333	98	50 - 150	0.0000	+/-0.50	
M3PFBS	114906.1	1.944683	104,197.00	1.9364	110	50 - 150	0.0083	+/-0.50	
M7PFUnA	421543.8	3.946033	453,308.00	3.946017	93	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	32375.59	3.437283	27,565.00	3.445283	117	50 - 150	-0.0080	+/-0.50	
M5PFPeA	296427	1.757717	276,869.00	1.757717	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	497145.6	2.655	458,596.00	2.646767	108	50 - 150	0.0082	+/-0.50	
M3PFHxS	73935.12	3.218333	68,806.00	3.218333	107	50 - 150	0.0000	+/-0.50	
M4PFHpA	510817.8	3.186933	461,168.00	3.186933	111	50 - 150	0.0000	+/-0.50	
M8PFOA	559667.8	3.453817	508,809.00	3.453817	110	50 - 150	0.0000	+/-0.50	
M8PFOS	74508.68	3.636183	76,995.00	3.636183	97	50 - 150	0.0000	+/-0.50	
M9PFNA	545909.5	3.637217	526,406.00	3.637217	104	50 - 150	0.0000	+/-0.50	
MPFDoA	347648.5	4.088634	386,713.00	4.088634	90	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	93566.37	3.9535	101,789.00	3.9535	92	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	109406.2	3.873767	116,586.00	3.873767	94	50 - 150	0.0000	+/-0.50	

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SOP-454 PFAS in Water	
Perfluorobutanoic acid (PFBA)	NH-P,PA
Perfluorobutanesulfonic acid (PFBS)	NH-P,PA
Perfluoropentanoic acid (PFPeA)	NH-P,PA
Perfluorohexanoic acid (PFHxA)	NH-P,PA
11Cl-PF3OUdS (F53B Major)	NH-P,PA
9Cl-PF3ONS (F53B Minor)	NH-P,PA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,PA
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,PA
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P,PA
Perfluorodecanoic acid (PFDA)	NH-P,PA
Perfluorododecanoic acid (PFDoA)	NH-P,PA
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P,PA
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,PA
N-EtFOSAA (NEtFOSAA)	NH-P,PA
N-MeFOSAA (NMeFOSAA)	NH-P,PA
Perfluorotetradecanoic acid (PFTA)	NH-P,PA
Perfluorotridecanoic acid (PFTrDA)	NH-P,PA
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P,PA
Perfluorodecanesulfonic acid (PFDS)	NH-P,PA
Perfluorooctanesulfonamide (FOSA)	NH-P,PA
Perfluorononanesulfonic acid (PFNS)	NH-P,PA
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P,PA
Perfluoro-1-butanesulfonamide (FBSA)	NH-P,PA
Perfluorohexanesulfonic acid (PFHxS)	NH-P,PA
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P,PA
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P,PA
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P,PA
Perfluoropentanesulfonic acid (PFPeS)	NH-P,PA
Perfluoroundecanoic acid (PFUnA)	NH-P,PA
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,PA
Perfluoroheptanoic acid (PFHpA)	NH-P,PA
Perfluorooctanoic acid (PFOA)	NH-P,PA
Perfluorooctanesulfonic acid (PFOS)	NH-P,PA
Perfluorononanoic acid (PFNA)	NH-P,PA

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2024

23E3794 KAF

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Access COC's and Support Requests

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 1

Company Name:	Horsley Witten Group
Address:	90 Route 6A Sandwich, MA
Phone:	508-833-6600
Project Name:	HYA
Project Location:	Hyannis, MA
Project Number:	
Project Manager:	Bryan Massa
Pace Quote Name/Number:	
Invoice Recipient:	bmassa@horsleywitten.com
Sampled By:	Caroline Armstrong

Requested Turnaround Time

7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☒ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

PCB ONLY

SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS (Isotope dilution)										[2] Preservation Code
1	ME-1	5/20/23	845	G	WW				2			X										
2	ME-2	↓	855	G	WW				2			X										
3	ME-3		850	G	WW				2			X										

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Relinquished by: (signature)	Date/Time: 5/30/23 1143	Client Comments:
Received by: (signature)	Date/Time: 5/30/23 1143	
Relinquished by: (signature)	Date/Time: 5/30/23 1606	
Received by: (signature)	Date/Time: 5/30/23 1606	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements

MA: GW-1
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ *AIHA-LAP,LLC*

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

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ENV-FRM-ELON-0001 V05__Sample Receiving Checklist

Log In Back-Sheet

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

Pace
PEOPLE ADVANCING SCIENCE

Client Horsley Witten Group

Project HYA

MCP/RCP Required MA MCP

Deliverable Package Requirement CAM-1

Location Hyannis, MA

PWSID# (When Applicable) NA

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time GR 5/30/23 1606

~~Back-Sheet By / Date / Time~~ GR 5/30/23 1857

Temperature Method GUN #2

Temp ☑ < 6° C Actual Temperature 2.4

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
~~Is there enough Volume~~	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☐	☑
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☑

Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Additional Container Notes

Sample	Soils Jars (Circle Amb/Clear)				Ambers							Plastics										VOA Vials					Other / Fill in					
					1 Liter			250mL			100mL	1 Liter		500mL		250mL																
	16oz Amb/Clear	8oz Amb/Clear	4oz Amb/Clear	2oz Amb/Clear	Unpreserved	HCL	Sulfuric	Sulfuric	Phosphoric	HCl	Unpreserved	Unpreserved	Sulfuric	Unpreserved	Sulfuric	Unpreserved	Trizma	Sulfuric	Nitric	NaOH	NaOH/Zinc	Unpreserved	HCl	MeOH	D.I. Water	BiSulfate	Col/Bact					
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June 20, 2023

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Hyannis, MA
Client Job Number:
Project Number: 22071
Laboratory Work Order Number: 23E3794

Enclosed are results of analyses for samples as received by the laboratory on May 30, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kaitlyn A. Feliciano
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 6/20/2023

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 22071

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23E3794

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Hyannis, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
ME-1	23E3794-01	Ground Water		SOP-454 PFAS	
ME-2	23E3794-02	Ground Water		SOP-454 PFAS	
ME-3	23E3794-03	Ground Water		SOP-454 PFAS	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

SOP-454 PFAS

Qualifications:

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:

Perfluoroheptanesulfonic acid (PFHpS)
23E3794-01RE1[ME-1], 23E3794-02RE1[ME-2], 23E3794-03RE1[ME-3], B342713-BSD1

S-29

Extracted Internal Standard is outside of control limits.

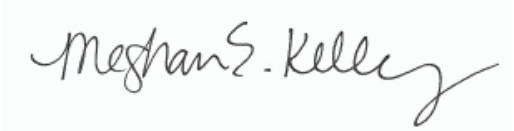
Analyte & Samples(s) Qualified:

M2-6:2FTS
23E3794-01RE1[ME-1]

M2-8:2FTS
S088753-CCV1

M8FOSA
23E3794-02RE1[ME-2]

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Hyannis, MA | Sample Description: | Work Order: 23E3794

Date Received: 5/30/2023

Field Sample #: ME-1 | Sampled: 5/26/2023 08:45

Sample ID: 23E3794-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	19	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorobutanesulfonic acid (PFBS)	2.5	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoropentanoic acid (PFPeA)	60	1.8	0.72	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorohexanoic acid (PFHxA)	38	1.8	0.74	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.87	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorodecanoic acid (PFDA)	0.83	1.8	0.75	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.84	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.0	1.8	0.74	ng/L	1	L-07	SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.75	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	0.95	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.3	1.8	0.71	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorohexanesulfonic acid (PFHxS)	29	1.8	0.65	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.65	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.59	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	43	1.8	1.1	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.4	1.8	0.69	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluoroheptanoic acid (PFHpA)	18	1.8	0.76	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorooctanoic acid (PFOA)	18	1.8	1.2	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorooctanesulfonic acid (PFOS)	69	1.8	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW
Perfluorononanoic acid (PFNA)	11	1.8	0.84	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:52	QNW

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Project Location: Hyannis, MA | Sample Description: | Work Order: 23E3794

Date Received: 5/30/2023

Field Sample #: ME-2 | Sampled: 5/26/2023 08:55

Sample ID: 23E3794-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	16	1.9	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorobutanesulfonic acid (PFBS)	4.2	1.9	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoropentanoic acid (PFPeA)	54	1.9	0.75	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorohexanoic acid (PFHxA)	40	1.9	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.9	0.71	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.9	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	0.56	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	5.7	1.9	0.90	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorodecanoic acid (PFDA)	ND	1.9	0.79	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.9	0.87	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.69	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.4	1.9	0.77	ng/L	1	L-07	SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.9	0.76	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.9	0.99	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.9	0.90	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	0.78	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	0.98	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorooctanesulfonamide (FOSA)	ND	1.9	0.96	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.9	0.97	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	1.0	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-1-butanesulfonamide (FBSA)	1.7	1.9	0.74	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorohexanesulfonic acid (PFHxS)	44	1.9	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	0.61	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	45	1.9	1.1	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoropentanesulfonic acid (PFPeS)	3.6	1.9	0.72	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.9	0.81	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluoroheptanoic acid (PFHpA)	17	1.9	0.80	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorooctanoic acid (PFOA)	17	1.9	1.3	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorooctanesulfonic acid (PFOS)	65	1.9	0.80	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW
Perfluorononanoic acid (PFNA)	6.7	1.9	0.87	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 16:59	QNW

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Project Location: Hyannis, MA | Sample Description: | Work Order: 23E3794

Date Received: 5/30/2023

Field Sample #: ME-3 | Sampled: 5/26/2023 08:50

Sample ID: 23E3794-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	8.2	1.8	0.67	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorobutanesulfonic acid (PFBS)	1.7	1.8	0.66	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoropentanoic acid (PFPeA)	23	1.8	0.71	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorohexanoic acid (PFHxA)	18	1.8	0.73	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
11Cl-PF3OUdS (F53B Major)	ND	1.8	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
9Cl-PF3ONS (F53B Minor)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	0.53	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	0.86	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorodecanoic acid (PFDA)	ND	1.8	0.74	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorododecanoic acid (PFDoA)	ND	1.8	0.83	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.66	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoroheptanesulfonic acid (PFHpS)	2.2	1.8	0.73	ng/L	1	L-07	SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
N-EtFOSAA (NEtFOSAA)	ND	1.8	0.72	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
N-MeFOSAA (NMeFOSAA)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorotetradecanoic acid (PFTA)	ND	1.8	0.85	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	0.74	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	0.69	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	0.93	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorooctanesulfonamide (FOSA)	11	1.8	0.91	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorononanesulfonic acid (PFNS)	ND	1.8	0.92	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-1-hexanesulfonamide (FHxSA)	1.9	1.8	0.94	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-1-butanesulfonamide (FBSA)	0.91	1.8	0.70	ng/L	1	J	SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorohexanesulfonic acid (PFHxS)	34	1.8	0.64	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	0.64	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	0.58	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.7	1.8	1.1	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoropentanesulfonic acid (PFPeS)	2.1	1.8	0.68	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoroundecanoic acid (PFUnA)	ND	1.8	0.77	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.70	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluoroheptanoic acid (PFHpA)	8.6	1.8	0.75	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorooctanoic acid (PFOA)	14	1.8	1.2	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorooctanesulfonic acid (PFOS)	83	1.8	0.76	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW
Perfluorononanoic acid (PFNA)	6.1	1.8	0.83	ng/L	1		SOP-454 PFAS	6/13/23	6/15/23 17:06	QNW

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Sample Extraction Data

Prep Method:SOP 454-PFAAS **Analytical Method:SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23E3794-01RE1 [ME-1]	B342713	276	1.00	06/13/23
23E3794-02RE1 [ME-2]	B342713	264	1.00	06/13/23
23E3794-03RE1 [ME-3]	B342713	279	1.00	06/13/23

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342713 - SOP 454-PFAAS										
Blank (B342713-BLK1)				Prepared: 06/13/23 Analyzed: 06/15/23						
Perfluorobutanoic acid (PFBA)	ND	2.1	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.1	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.1	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.1	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.1	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.1	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.1	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.1	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.1	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.1	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.1	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.1	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.1	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	2.1	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	2.1	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.1	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	2.1	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.1	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.1	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.1	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.1	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.1	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.1	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.1	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.1	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.1	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.1	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	2.1	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.1	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.1	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.1	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.1	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.1	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.1	ng/L							
LCS (B342713-BS1)				Prepared: 06/13/23 Analyzed: 06/15/23						
Perfluorobutanoic acid (PFBA)	10.3	2.0	ng/L	10.2		102	73-129			
Perfluorobutanesulfonic acid (PFBS)	9.03	2.0	ng/L	8.99		100	72-130			
Perfluoropentanoic acid (PFPeA)	10.3	2.0	ng/L	10.2		101	72-129			
Perfluorohexanoic acid (PFHxA)	10.5	2.0	ng/L	10.2		103	72-129			
11Cl-PF3OUdS (F53B Major)	9.20	2.0	ng/L	9.57		96.1	55.1-141			
9Cl-PF3ONS (F53B Minor)	8.88	2.0	ng/L	9.47		93.7	59.6-146			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.47	2.0	ng/L	9.57		99.0	60.3-131			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.74	2.0	ng/L	10.2		95.9	37.6-167			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.64	2.0	ng/L	9.75		98.8	67-138			
Perfluorodecanoic acid (PFDA)	10.6	2.0	ng/L	10.2		104	71-129			
Perfluorododecanoic acid (PFDoA)	11.9	2.0	ng/L	10.2		117	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	8.89	2.0	ng/L	9.04		98.4	49.4-154			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B342713 - SOP 454-PFAAS											
LCS (B342713-BS1)				Prepared: 06/13/23 Analyzed: 06/15/23							
Perfluoroheptanesulfonic acid (PFHpS)	10.5	2.0	ng/L	9.70		108		69-134			
N-EtFOSAA (NEtFOSAA)	11.4	2.0	ng/L	10.2		112		61-135			
N-MeFOSAA (NMeFOSAA)	11.9	2.0	ng/L	10.2		117		65-136			
Perfluorotetradecanoic acid (PFTA)	10.7	2.0	ng/L	10.2		105		71-132			
Perfluorotridecanoic acid (PFTrDA)	11.7	2.0	ng/L	10.2		115		65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.63	2.0	ng/L	9.50		101		63-143			
Perfluorodecanesulfonic acid (PFDS)	7.82	2.0	ng/L	9.80		79.7		53-142			
Perfluorooctanesulfonamide (FOSA)	10.8	2.0	ng/L	10.2		107		67-137			
Perfluorononanesulfonic acid (PFNS)	8.87	2.0	ng/L	9.75		90.9		69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	9.25	2.0	ng/L	10.2		91.1		61.7-156			
Perfluoro-1-butanesulfonamide (FBSA)	9.18	2.0	ng/L	10.2		90.4		61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.78	2.0	ng/L	9.30		94.4		68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.4	2.0	ng/L	10.2		103		59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.0	2.0	ng/L	10.2		98.8		59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.6	2.0	ng/L	9.65		110		64-140			
Perfluoropentanesulfonic acid (PFPeS)	9.72	2.0	ng/L	9.55		102		71-127			
Perfluoroundecanoic acid (PFUnA)	10.2	2.0	ng/L	10.2		100		69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	11.3	2.0	ng/L	10.2		111		58.5-143			
Perfluoroheptanoic acid (PFHpA)	10.4	2.0	ng/L	10.2		103		72-130			
Perfluorooctanoic acid (PFOA)	10.7	2.0	ng/L	10.2		105		71-133			
Perfluorooctanesulfonic acid (PFOS)	9.66	2.0	ng/L	9.40		103		65-140			
Perfluorononanoic acid (PFNA)	10.1	2.0	ng/L	10.2		99.7		69-130			
LCS Dup (B342713-BSD1)				Prepared: 06/13/23 Analyzed: 06/15/23							
Perfluorobutanoic acid (PFBA)	11.4	2.1	ng/L	10.5		109		73-129	9.93	30	
Perfluorobutanesulfonic acid (PFBS)	10.2	2.1	ng/L	9.26		110		72-130	12.3	30	
Perfluoropentanoic acid (PFPeA)	11.5	2.1	ng/L	10.5		109		72-129	10.8	30	
Perfluorohexanoic acid (PFHxA)	11.5	2.1	ng/L	10.5		110		72-129	9.29	30	
11Cl-PF3OUdS (F53B Major)	9.22	2.1	ng/L	9.86		93.5		55.1-141	0.252	30	
9Cl-PF3ONS (F53B Minor)	10.2	2.1	ng/L	9.76		105		59.6-146	13.9	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	10.5	2.1	ng/L	9.86		107		60.3-131	10.5	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.16	2.1	ng/L	10.5		87.6		37.6-167	6.15	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	12.6	2.1	ng/L	10.0		125		67-138	26.6	30	
Perfluorodecanoic acid (PFDA)	11.3	2.1	ng/L	10.5		108		71-129	6.41	30	
Perfluorododecanoic acid (PFDoA)	11.4	2.1	ng/L	10.5		109		72-134	3.79	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	10.1	2.1	ng/L	9.32		108		49.4-154	12.3	30	
Perfluoroheptanesulfonic acid (PFHpS)	13.6	2.1	ng/L	10.0		**137**	*	69-134	26.4	30	L-07
N-EtFOSAA (NEtFOSAA)	12.3	2.1	ng/L	10.5		118		61-135	7.96	30	
N-MeFOSAA (NMeFOSAA)	12.9	2.1	ng/L	10.5		123		65-136	7.82	30	
Perfluorotetradecanoic acid (PFTA)	11.6	2.1	ng/L	10.5		111		71-132	8.45	30	
Perfluorotridecanoic acid (PFTrDA)	11.5	2.1	ng/L	10.5		110		65-144	1.59	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.3	2.1	ng/L	9.79		106		63-143	7.08	30	
Perfluorodecanesulfonic acid (PFDS)	8.99	2.1	ng/L	10.1		89.0		53-142	14.0	30	
Perfluorooctanesulfonamide (FOSA)	11.6	2.1	ng/L	10.5		111		67-137	6.57	30	
Perfluorononanesulfonic acid (PFNS)	11.5	2.1	ng/L	10.0		115		69-127	25.9	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	10.6	2.1	ng/L	10.5		101		61.7-156	13.3	30	
Perfluoro-1-butanesulfonamide (FBSA)	10.7	2.1	ng/L	10.5		102		61.3-145	15.0	30	
Perfluorohexanesulfonic acid (PFHxS)	10.5	2.1	ng/L	9.58		109		68-131	17.6	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	11.7	2.1	ng/L	10.5		111		59.8-147	11.2	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	11.3	2.1	ng/L	10.5		108		59.5-146	12.3	30	

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342713 - SOP 454-PFAAS										
LCS Dup (B342713-BSD1)				Prepared: 06/13/23 Analyzed: 06/15/23						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.81	2.1	ng/L	9.94		98.6	64-140	8.13	30	
Perfluoropentanesulfonic acid (PFPeS)	11.0	2.1	ng/L	9.84		112	71-127	12.7	30	
Perfluoroundecanoic acid (PFUnA)	11.4	2.1	ng/L	10.5		109	69-133	11.4	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	12.4	2.1	ng/L	10.5		119	58.5-143	9.68	30	
Perfluoroheptanoic acid (PFHpA)	11.1	2.1	ng/L	10.5		106	72-130	5.87	30	
Perfluorooctanoic acid (PFOA)	11.2	2.1	ng/L	10.5		107	71-133	4.69	30	
Perfluorooctanesulfonic acid (PFOS)	11.1	2.1	ng/L	9.68		114	65-140	13.7	30	
Perfluorononanoic acid (PFNA)	11.3	2.1	ng/L	10.5		108	69-130	11.0	30	

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
S-29	Extracted Internal Standard is outside of control limits.

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-1 (23E3794-01RE1)			Lab File ID: 23E3794-01RE1.d			Analyzed: 06/15/23 16:52			
M8FOSA	213334.6	3.980567	227,522.00	3.980567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	28486.3	2.562517	27,028.00	2.562517	105	50 - 150	0.0000	+/-0.50	
M2PFTA	355459	4.329667	479,880.00	4.329667	74	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	37332.14	3.794817	33,212.00	3.802783	112	50 - 150	-0.0080	+/-0.50	
MPFBA	231042	1.066783	256,957.00	1.058467	90	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	102523.9	2.880217	114,902.00	2.880217	89	50 - 150	0.0000	+/-0.50	
M6PFDA	449810.7	3.795333	445,919.00	3.795333	101	50 - 150	0.0000	+/-0.50	
M3PFBS	110999.1	1.944683	104,197.00	1.9364	107	50 - 150	0.0083	+/-0.50	
M7PFUnA	450689.3	3.946033	453,308.00	3.946017	99	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	43785.91	3.445283	27,565.00	3.445283	159	50 - 150	0.0000	+/-0.50	*
M5PFPeA	271434.3	1.757717	276,869.00	1.757717	98	50 - 150	0.0000	+/-0.50	
M5PFHxA	467718.8	2.655	458,596.00	2.646767	102	50 - 150	0.0082	+/-0.50	
M3PFHxS	77050.47	3.218333	68,806.00	3.218333	112	50 - 150	0.0000	+/-0.50	
M4PFHpA	500292.4	3.186933	461,168.00	3.186933	108	50 - 150	0.0000	+/-0.50	
M8PFOA	548914.8	3.453817	508,809.00	3.453817	108	50 - 150	0.0000	+/-0.50	
M8PFOS	76850.11	3.636183	76,995.00	3.636183	100	50 - 150	0.0000	+/-0.50	
M9PFNA	512879.3	3.637217	526,406.00	3.637217	97	50 - 150	0.0000	+/-0.50	
MPFDoA	361032.2	4.088634	386,713.00	4.088634	93	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	91828.38	3.9535	101,789.00	3.9535	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	107819.7	3.873767	116,586.00	3.873767	92	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-2 (23E3794-02RE1)			Lab File ID: 23E3794-02RE1.d			Analyzed: 06/15/23 16:59			
M8FOSA	63430.73	3.980567	227,522.00	3.980567	28	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	24893.35	2.562517	27,028.00	2.562517	92	50 - 150	0.0000	+/-0.50	
M2PFTA	364628.1	4.329667	479,880.00	4.329667	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	31018.9	3.794817	33,212.00	3.802783	93	50 - 150	-0.0080	+/-0.50	
MPFBA	216959.8	1.058467	256,957.00	1.058467	84	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98515.74	2.880217	114,902.00	2.880217	86	50 - 150	0.0000	+/-0.50	
M6PFDA	380677.3	3.795333	445,919.00	3.795333	85	50 - 150	0.0000	+/-0.50	
M3PFBS	99833.68	1.9364	104,197.00	1.9364	96	50 - 150	0.0000	+/-0.50	
M7PFUnA	358386.6	3.946033	453,308.00	3.946017	79	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	37812.95	3.437283	27,565.00	3.445283	137	50 - 150	-0.0080	+/-0.50	
M5PFPeA	250487.6	1.757717	276,869.00	1.757717	90	50 - 150	0.0000	+/-0.50	
M5PFHxA	423755.1	2.655	458,596.00	2.646767	92	50 - 150	0.0082	+/-0.50	
M3PFHxS	69592.15	3.218333	68,806.00	3.218333	101	50 - 150	0.0000	+/-0.50	
M4PFHpA	456410.2	3.186933	461,168.00	3.186933	99	50 - 150	0.0000	+/-0.50	
M8PFOA	478276.5	3.453817	508,809.00	3.453817	94	50 - 150	0.0000	+/-0.50	
M8PFOS	68816.74	3.636183	76,995.00	3.636183	89	50 - 150	0.0000	+/-0.50	
M9PFNA	474013.9	3.637217	526,406.00	3.637217	90	50 - 150	0.0000	+/-0.50	
MPFDoA	295467.7	4.088634	386,713.00	4.088634	76	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	71346.97	3.9535	101,789.00	3.9535	70	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	82685.68	3.873767	116,586.00	3.873767	71	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
ME-3 (23E3794-03RE1)			Lab File ID: 23E3794-03RE1.d			Analyzed: 06/15/23 17:06			
M8FOSA	166835.3	3.980567	227,522.00	3.980567	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	24394.43	2.562517	27,028.00	2.562517	90	50 - 150	0.0000	+/-0.50	
M2PFTA	343507.3	4.329667	479,880.00	4.329667	72	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	29683.95	3.794817	33,212.00	3.802783	89	50 - 150	-0.0080	+/-0.50	
MPFBA	199579.7	1.066783	256,957.00	1.058467	78	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	95104.96	2.880217	114,902.00	2.880217	83	50 - 150	0.0000	+/-0.50	
M6PFDA	375022.2	3.795333	445,919.00	3.795333	84	50 - 150	0.0000	+/-0.50	
M3PFBS	92953.21	1.9364	104,197.00	1.9364	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	351270.3	3.946033	453,308.00	3.946017	77	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	31350.92	3.437283	27,565.00	3.445283	114	50 - 150	-0.0080	+/-0.50	
M5PFPeA	231561.3	1.757717	276,869.00	1.757717	84	50 - 150	0.0000	+/-0.50	
M5PFHxA	392931.2	2.646767	458,596.00	2.646767	86	50 - 150	0.0000	+/-0.50	
M3PFHxS	64172.11	3.218333	68,806.00	3.218333	93	50 - 150	0.0000	+/-0.50	
M4PFHpA	411807.9	3.186933	461,168.00	3.186933	89	50 - 150	0.0000	+/-0.50	
M8PFOA	450823.7	3.453817	508,809.00	3.453817	89	50 - 150	0.0000	+/-0.50	
M8PFOS	64565.88	3.636183	76,995.00	3.636183	84	50 - 150	0.0000	+/-0.50	
M9PFNA	438212.4	3.637217	526,406.00	3.637217	83	50 - 150	0.0000	+/-0.50	
MPFDoA	287448.7	4.088634	386,713.00	4.088634	74	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	80767.51	3.9535	101,789.00	3.9535	79	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	82407.26	3.873767	116,586.00	3.873767	71	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B342713-BLK1)			Lab File ID: B342713-BLK1.d			Analyzed: 06/15/23 16:01			
M8FOSA	196862.9	3.980567	227,522.00	3.980567	87	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	26152.61	2.562517	27,028.00	2.562517	97	50 - 150	0.0000	+/-0.50	
M2PFTA	427562.6	4.337783	479,880.00	4.329667	89	50 - 150	0.0081	+/-0.50	
M2-8:2FTS	29892	3.794817	33,212.00	3.802783	90	50 - 150	-0.0080	+/-0.50	
MPFBA	249440.2	1.058467	256,957.00	1.058467	97	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	94002.9	2.880217	114,902.00	2.880217	82	50 - 150	0.0000	+/-0.50	
M6PFDA	409812.8	3.795333	445,919.00	3.795333	92	50 - 150	0.0000	+/-0.50	
M3PFBS	105955.5	1.944683	104,197.00	1.9364	102	50 - 150	0.0083	+/-0.50	
M7PFUnA	426348.8	3.946017	453,308.00	3.946017	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	26142.75	3.437283	27,565.00	3.445283	95	50 - 150	-0.0080	+/-0.50	
M5PFPeA	274971.8	1.757717	276,869.00	1.757717	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	449201.1	2.655	458,596.00	2.646767	98	50 - 150	0.0082	+/-0.50	
M3PFHxS	65679.15	3.218333	68,806.00	3.218333	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	468079.8	3.186933	461,168.00	3.186933	101	50 - 150	0.0000	+/-0.50	
M8PFOA	511877	3.453817	508,809.00	3.453817	101	50 - 150	0.0000	+/-0.50	
M8PFOS	68250.95	3.636183	76,995.00	3.636183	89	50 - 150	0.0000	+/-0.50	
M9PFNA	486195.3	3.637217	526,406.00	3.637217	92	50 - 150	0.0000	+/-0.50	
MPFDoA	361203.5	4.088634	386,713.00	4.088634	93	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	91567.28	3.9535	101,789.00	3.9535	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	109350.9	3.873767	116,586.00	3.873767	94	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B342713-BS1)			Lab File ID: B342713-BS1.d			Analyzed: 06/15/23 15:47			
M8FOSA	177957.5	3.980567	227,522.00	3.980567	78	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	29196.96	2.562517	27,028.00	2.562517	108	50 - 150	0.0000	+/-0.50	
M2PFTA	408424.1	4.329667	479,880.00	4.329667	85	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	28086.29	3.794817	33,212.00	3.802783	85	50 - 150	-0.0080	+/-0.50	
MPFBA	252572.1	1.058467	256,957.00	1.058467	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	97688.41	2.880217	114,902.00	2.880217	85	50 - 150	0.0000	+/-0.50	
M6PFDA	395000.1	3.795333	445,919.00	3.795333	89	50 - 150	0.0000	+/-0.50	
M3PFBS	107557.4	1.944683	104,197.00	1.9364	103	50 - 150	0.0083	+/-0.50	
M7PFUnA	394744.1	3.946033	453,308.00	3.946017	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	28605.05	3.437283	27,565.00	3.445283	104	50 - 150	-0.0080	+/-0.50	
M5PFPeA	274098.7	1.757717	276,869.00	1.757717	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	460367.3	2.655	458,596.00	2.646767	100	50 - 150	0.0082	+/-0.50	
M3PFHxS	71050.67	3.218333	68,806.00	3.218333	103	50 - 150	0.0000	+/-0.50	
M4PFHpA	467747.6	3.186933	461,168.00	3.186933	101	50 - 150	0.0000	+/-0.50	
M8PFOA	513461.1	3.453817	508,809.00	3.453817	101	50 - 150	0.0000	+/-0.50	
M8PFOS	69476.79	3.636183	76,995.00	3.636183	90	50 - 150	0.0000	+/-0.50	
M9PFNA	496207.2	3.637217	526,406.00	3.637217	94	50 - 150	0.0000	+/-0.50	
MPFDoA	315758.9	4.088634	386,713.00	4.088634	82	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	89045.16	3.9535	101,789.00	3.9535	87	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	94363.59	3.873767	116,586.00	3.873767	81	50 - 150	0.0000	+/-0.50	

con-test®
A Pace Analytical® Laboratory

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B342713-BSD1)			Lab File ID: B342713-BSD1.d			Analyzed: 06/15/23 15:54			
M8FOSA	220138.8	3.980567	227,522.00	3.980567	97	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	32367.33	2.562517	27,028.00	2.562517	120	50 - 150	0.0000	+/-0.50	
M2PFTA	441651.6	4.329667	479,880.00	4.329667	92	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	31301.99	3.794817	33,212.00	3.802783	94	50 - 150	-0.0080	+/-0.50	
MPFBA	272321.5	1.058467	256,957.00	1.058467	106	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	118835	2.880217	114,902.00	2.880217	103	50 - 150	0.0000	+/-0.50	
M6PFDA	437059.7	3.795333	445,919.00	3.795333	98	50 - 150	0.0000	+/-0.50	
M3PFBS	114906.1	1.944683	104,197.00	1.9364	110	50 - 150	0.0083	+/-0.50	
M7PFUnA	421543.8	3.946033	453,308.00	3.946017	93	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	32375.59	3.437283	27,565.00	3.445283	117	50 - 150	-0.0080	+/-0.50	
M5PFPeA	296427	1.757717	276,869.00	1.757717	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	497145.6	2.655	458,596.00	2.646767	108	50 - 150	0.0082	+/-0.50	
M3PFHxS	73935.12	3.218333	68,806.00	3.218333	107	50 - 150	0.0000	+/-0.50	
M4PFHpA	510817.8	3.186933	461,168.00	3.186933	111	50 - 150	0.0000	+/-0.50	
M8PFOA	559667.8	3.453817	508,809.00	3.453817	110	50 - 150	0.0000	+/-0.50	
M8PFOS	74508.68	3.636183	76,995.00	3.636183	97	50 - 150	0.0000	+/-0.50	
M9PFNA	545909.5	3.637217	526,406.00	3.637217	104	50 - 150	0.0000	+/-0.50	
MPFDoA	347648.5	4.088634	386,713.00	4.088634	90	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	93566.37	3.9535	101,789.00	3.9535	92	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	109406.2	3.873767	116,586.00	3.873767	94	50 - 150	0.0000	+/-0.50	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SOP-454 PFAS in Water	
Perfluorobutanoic acid (PFBA)	NH-P,PA
Perfluorobutanesulfonic acid (PFBS)	NH-P,PA
Perfluoropentanoic acid (PFPeA)	NH-P,PA
Perfluorohexanoic acid (PFHxA)	NH-P,PA
11Cl-PF3OUdS (F53B Major)	NH-P,PA
9Cl-PF3ONS (F53B Minor)	NH-P,PA
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NH-P,PA
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P,PA
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P,PA
Perfluorodecanoic acid (PFDA)	NH-P,PA
Perfluorododecanoic acid (PFDoA)	NH-P,PA
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P,PA
Perfluoroheptanesulfonic acid (PFHpS)	NH-P,PA
N-EtFOSAA (NEtFOSAA)	NH-P,PA
N-MeFOSAA (NMeFOSAA)	NH-P,PA
Perfluorotetradecanoic acid (PFTA)	NH-P,PA
Perfluorotridecanoic acid (PFTrDA)	NH-P,PA
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P,PA
Perfluorodecanesulfonic acid (PFDS)	NH-P,PA
Perfluorooctanesulfonamide (FOSA)	NH-P,PA
Perfluorononanesulfonic acid (PFNS)	NH-P,PA
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P,PA
Perfluoro-1-butanesulfonamide (FBSA)	NH-P,PA
Perfluorohexanesulfonic acid (PFHxS)	NH-P,PA
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P,PA
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P,PA
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P,PA
Perfluoropentanesulfonic acid (PFPeS)	NH-P,PA
Perfluoroundecanoic acid (PFUnA)	NH-P,PA
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P,PA
Perfluoroheptanoic acid (PFHpA)	NH-P,PA
Perfluorooctanoic acid (PFOA)	NH-P,PA
Perfluorooctanesulfonic acid (PFOS)	NH-P,PA
Perfluorononanoic acid (PFNA)	NH-P,PA

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2023
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2024

23E3794 KAF

Pace Analytical®

Phone: 413-525-2332
Fax: 413-525-6405
Access COC's and Support Requests

http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 1

Company Name:	Horsley Witten Group
Address:	90 Route 6A Sandwich, MA
Phone:	508-833-6600
Project Name:	HYA
Project Location:	Hyannis, MA
Project Number:	
Project Manager:	Bryan Massa
Pace Quote Name/Number:	
Invoice Recipient:	bmassa@horsleywitten.com
Sampled By:	Caroline Armstrong

Requested Turnaround Time

7-Day ☐ 10-Day ☐
PFAS 10-Day (std) ☒ Due Date:

Rush-Approval Required

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Data Delivery

Format: PDF ☒ EXCEL ☒
Other:
CLP Like Data Pkg Required: ☐
Email To:
Fax To #:

Dissolved Metals Samples

○ Field Filtered
○ Lab to Filter

Orthophosphate Samples

○ Field Filtered
○ Lab to Filter

PCB ONLY

SOXHLET ☐
NON SOXHLET ☐

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1]Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS (Isotope dilution)										[2] Preservation Code
1	ME-1	5/20/23	845	G	WW				2			X										
2	ME-2	↓	855	G	WW				2			X										
3	ME-3		850	G	WW				2			X										

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y / N

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Pace Analytical is not responsible for missing samples from prepacked coolers

Relinquished by: (signature)	Date/Time: 5/30/23 1143	Client Comments:
Received by: (signature)	Date/Time: 5/30/23 1143	
Relinquished by: (signature)	Date/Time: 5/30/23 1606	
Received by: (signature)	Date/Time: 5/30/23 1606	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	
Relinquished by: (signature)	Date/Time:	
Received by: (signature)	Date/Time:	

Detection Limit Requirements

MA: GW-1
Other:

Special Requirements

☑ MA MCP Required
MCP Certification Form Required
☐ CT RCP Required
RCP Certification Form Required
☐ MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity

Government ☐ Municipality ☐ MWRA ☐ WRTA ☐
Federal ☐ 21 J ☐ School ☐
City ☐ Brownfield ☐ MBTA ☐

Other

☐ Chromatogram
☐ *AIHA-LAP,LLC*

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

ENV-FRM-ELON-0001 V05__Sample Receiving Checklist

Log In Back-Sheet

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

Pace
PEOPLE ADVANCING SCIENCE

Client Horsley Witten Group

Project HYA

MCP/RCP Required MA MCP

Deliverable Package Requirement CAM-1

Location Hyannis, MA

PWSID# (When Applicable) NA

Arrival Method:

Courier ☑ Fed Ex ☐ Walk In ☐ Other ☐

Received By / Date / Time GR 5/30/23 1606

~~Back-Sheet By / Date / Time~~ GR 5/30/23 1857

Temperature Method GUN #2

Temp ☑ < 6° C Actual Temperature 2.4

Rush Samples: Yes / (No) Notify

Short Hold: Yes / (No) Notify

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
~~Is there enough Volume~~	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☐	☑
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☑

Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Additional Container Notes

Sample	Soils Jars (Circle Amb/Clear)				Ambers							Plastics										VOA Vials					Other / Fill in					
					1 Liter			250mL			100mL	1 Liter		500mL		250mL																
	16oz Amb/Clear	8oz Amb/Clear	4oz Amb/Clear	2oz Amb/Clear	Unpreserved	HCL	Sulfuric	Sulfuric	Phosphoric	HCl	Unpreserved	Unpreserved	Sulfuric	Unpreserved	Sulfuric	Unpreserved	Trizma	Sulfuric	Nitric	NaOH	NaOH/Zinc	Unpreserved	HCl	MeOH	D.I. Water	BiSulfate	Col/Bact					
1																																
2																2																
3																2																
4																2																
5																																
6																																
7																																
8																																
9																																
10																																
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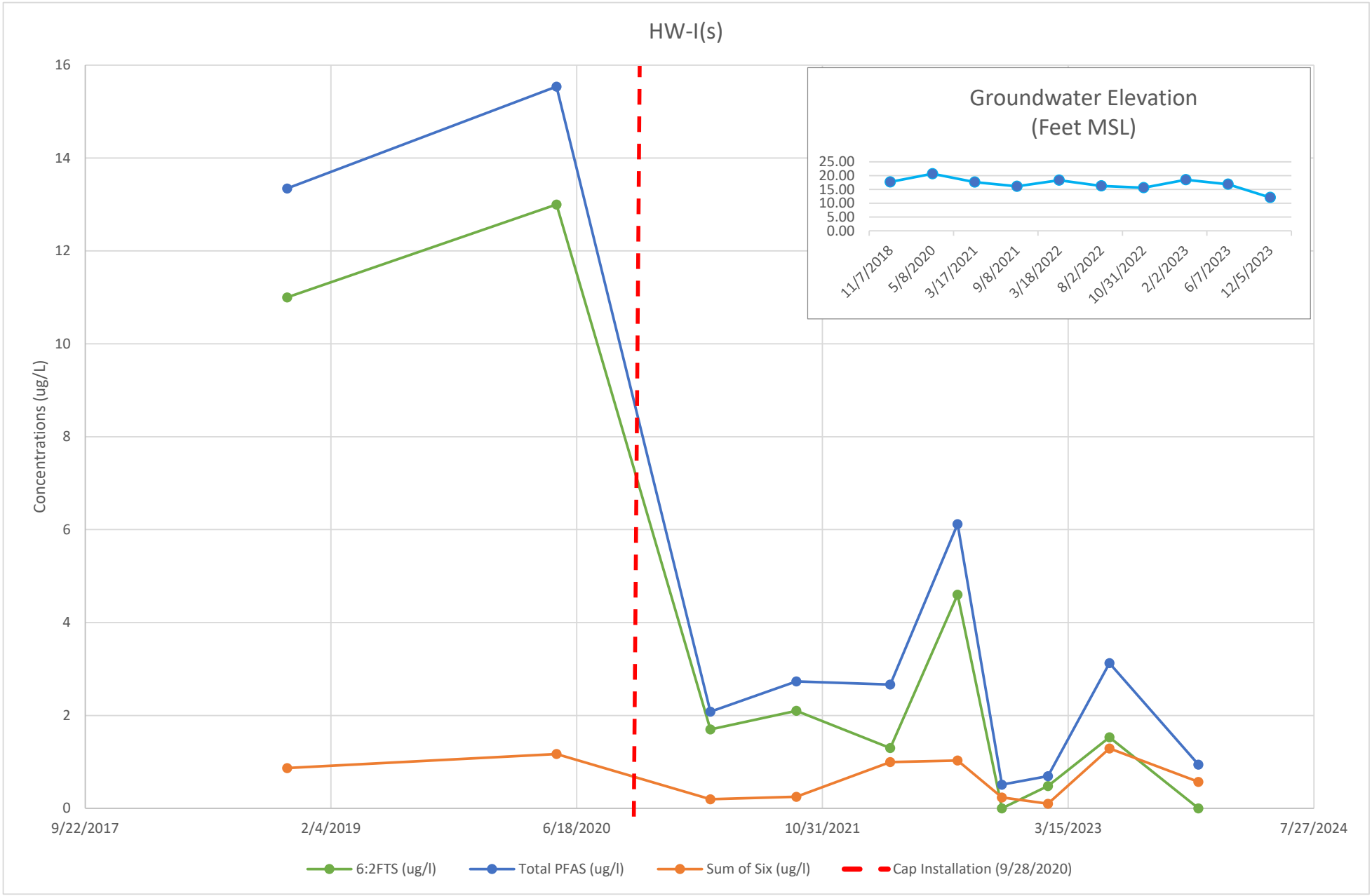
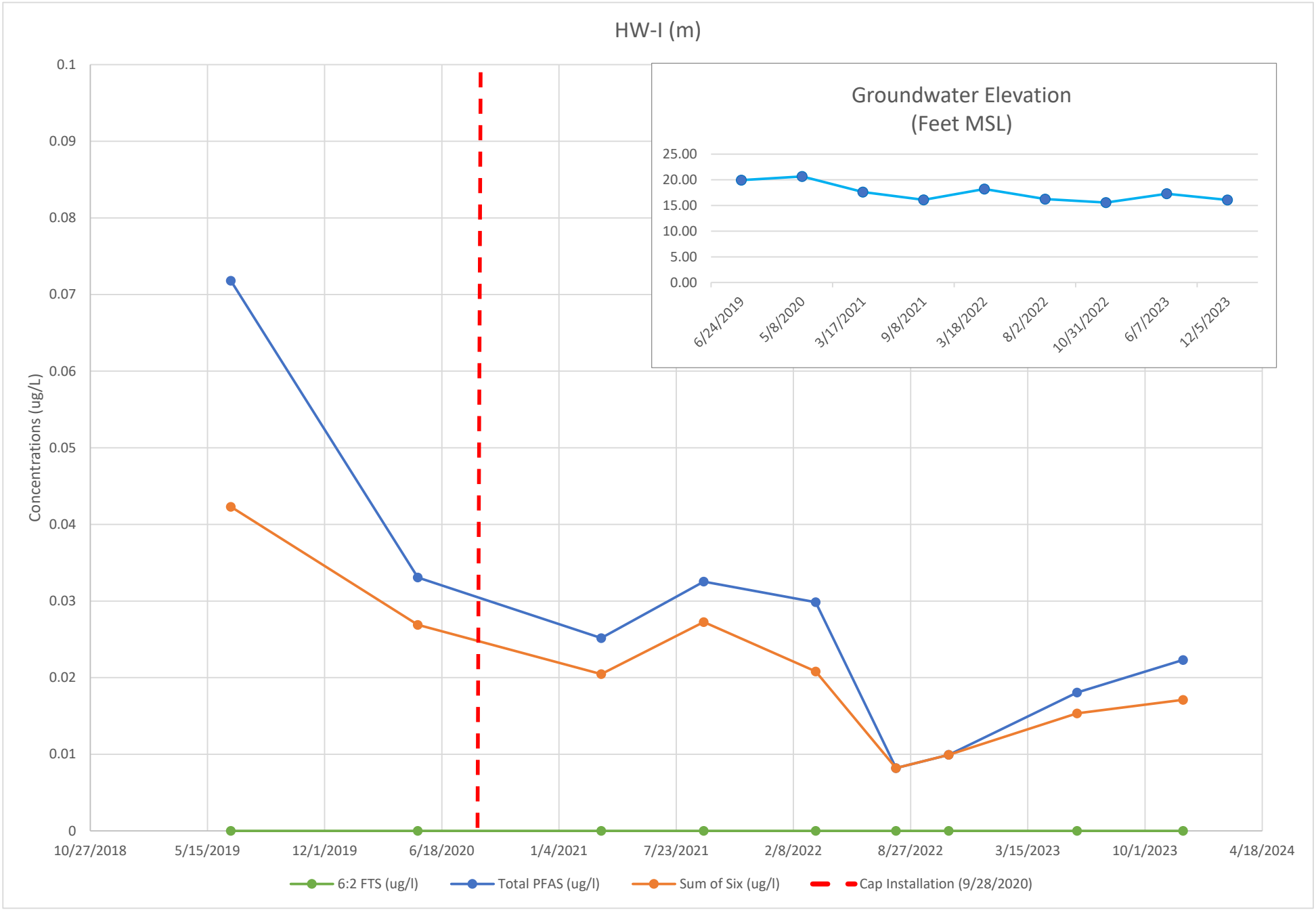
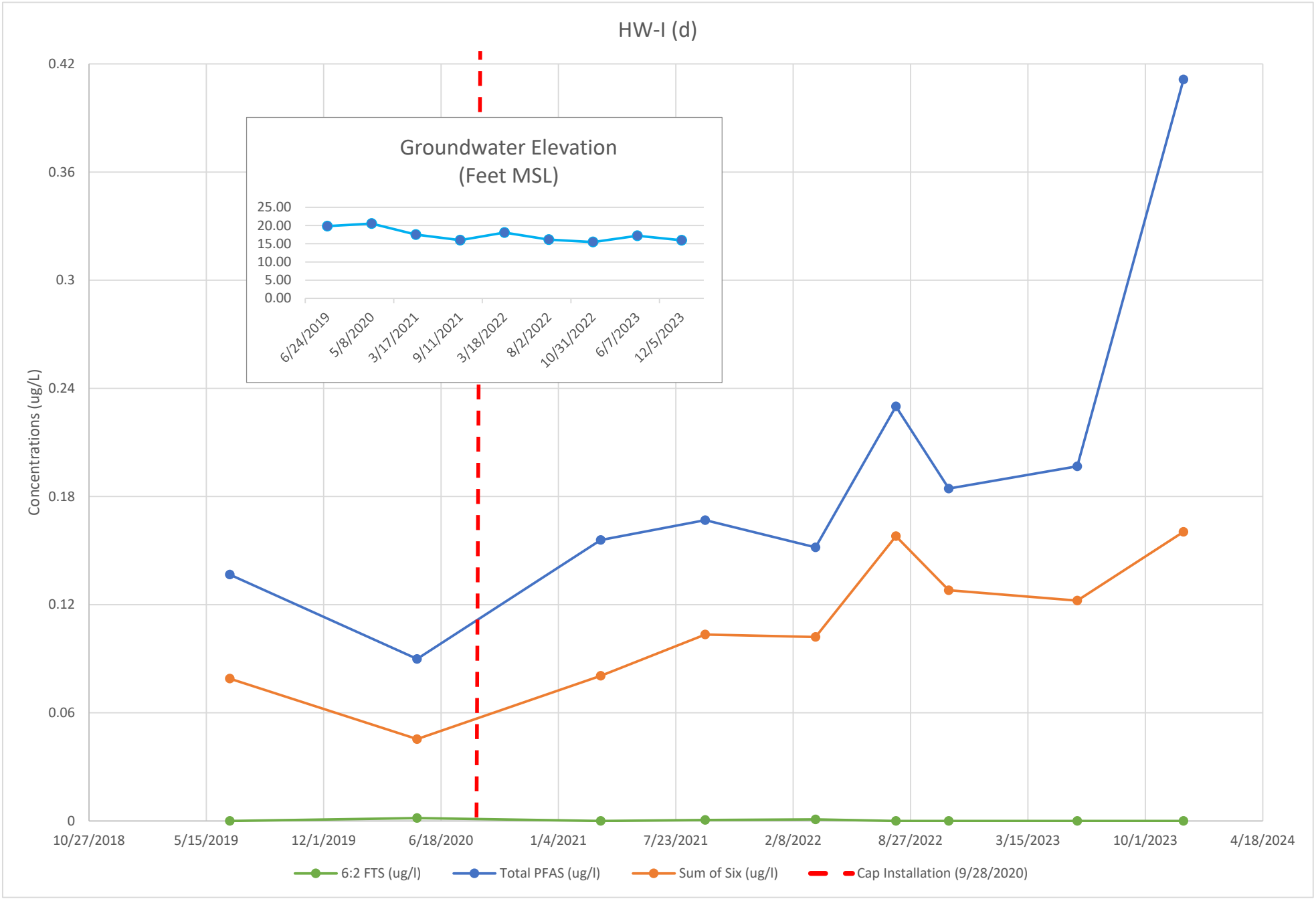
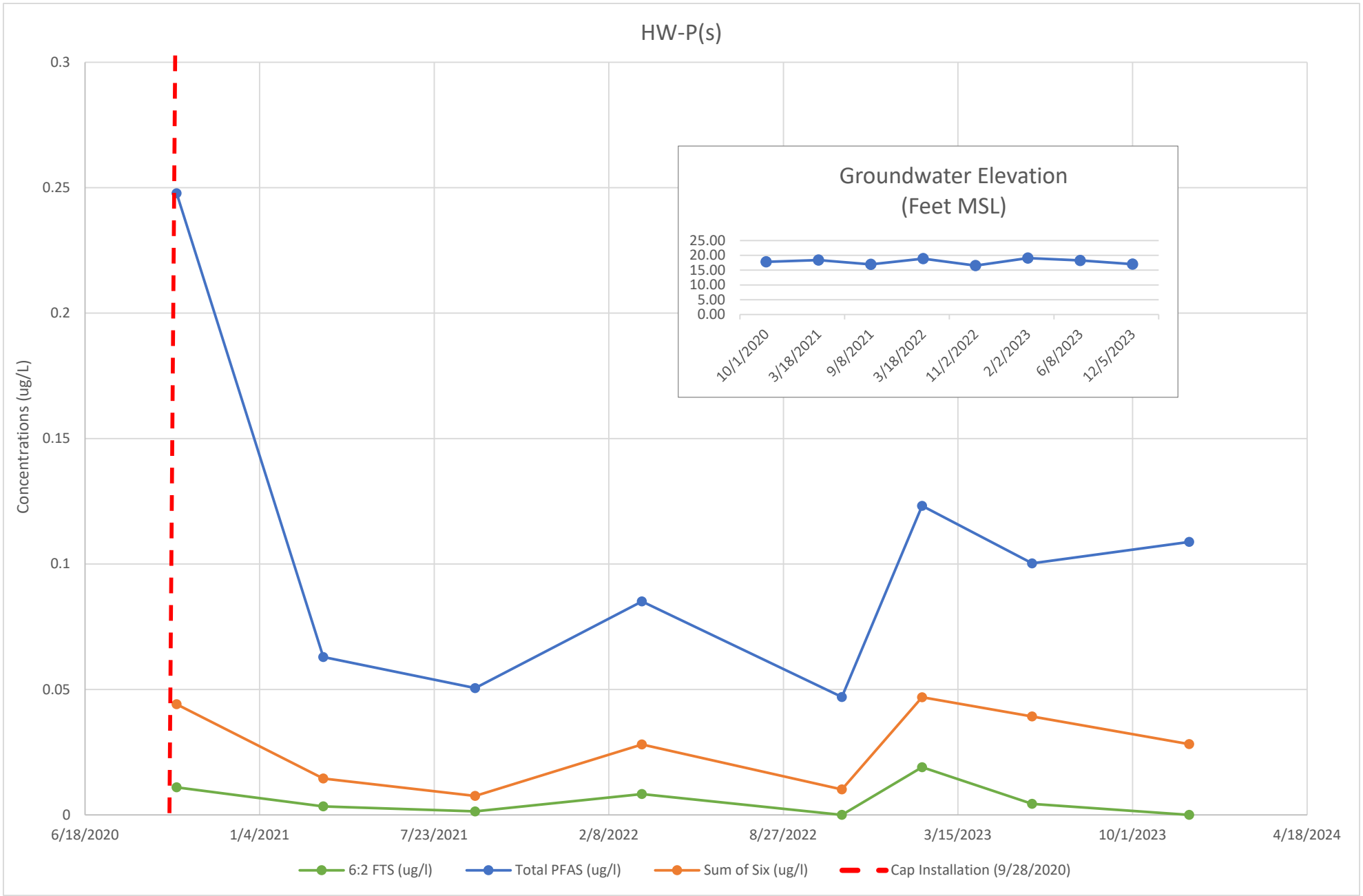
17																																
18																																
19																																
20																																


HW-I(s)
Concentrations (ug/L)
16
14
12
10
8
6
4
2
0
9/22/2017
2/4/2019
6/18/2020
10/31/2021
3/15/2023
7/27/2024
Groundwater Elevation
(Feet MSL)
25.00
20.00
15.00
10.00
5.00
0.00
11/7/2018
5/8/2020
3/17/2021
9/8/2021
3/18/2022
8/2/2022
10/31/2022
2/2/2023
6/7/2023
12/5/2023
6:2FTS (ug/l)
Total PFAS (ug/l)
Sum of Six (ug/l)
Cap Installation (9/28/2020)


HW-I (m)
Concentrations (ug/L)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
10/27/2018
5/15/2019
12/1/2019
6/18/2020
1/4/2021
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
6:2 FTS (ug/l)
Total PFAS (ug/l)
Sum of Six (ug/l)
Cap Installation (9/28/2020)
Groundwater Elevation
(Feet MSL)
25.00
20.00
15.00
10.00
5.00
0.00
6/24/2019
5/8/2020
3/17/2021
9/8/2021
3/18/2022
8/2/2022
10/31/2022
6/7/2023
12/5/2023


HW-I (d)
Concentrations (ug/L)
0.42
0.36
0.3
0.24
0.18
0.12
0.06
0
10/27/2018
5/15/2019
12/1/2019
6/18/2020
1/4/2021
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
Groundwater Elevation
(Feet MSL)
25.00
20.00
15.00
10.00
5.00
0.00
6/24/2019
5/8/2020
3/17/2021
9/11/2021
3/18/2022
8/2/2022
10/31/2022
6/7/2023
12/5/2023
6:2 FTS (ug/l)
Total PFAS (ug/l)
Sum of Six (ug/l)
Cap Installation (9/28/2020)


HW-P(s)
Concentrations (ug/L)
0.3
0.25
0.2
0.15
0.1
0.05
0
6/18/2020
1/4/2021
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
Groundwater Elevation
(Feet MSL)
25.00
20.00
15.00
10.00
5.00
0.00
10/1/2020
3/18/2021
9/8/2021
3/18/2022
11/2/2022
2/2/2023
6/8/2023
12/5/2023
6:2 FTS (ug/l)
Total PFAS (ug/l)
Sum of Six (ug/l)
Cap Installation (9/28/2020)

HW-P (m)
Concentrations (ug/L)
0.18
0.15
0.12
0.09
0.06
0.03
0
6/18/2020
1/4/2021
7/23/2021
2/8/2022
8/27/2022
3/15/2023
10/1/2023
4/18/2024
Groundwater Elevation
(Feet MSL)
20.00
15.00
10.00
5.00
0.00
10/1/2020
3/18/2021
9/8/2021
3/18/2022
11/2/2022
6/8/2023
12/5/2023
6:2 FTS (ug/l)
Total PFAS (ug/l)
Sum of Six (ug/L)
Cap Installation (9/28/2020)

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DRINKING WATER PROGRAM
100 CAMBRIDGE STREET, SUITE 900, BOSTON, MA 02114 ● (617) 292-5770

2024
Certificate of Registration

The Department of Environmental Protection
Drinking Water Program
Hereby Recognizes the

HYANNIS WATER SYSTEM, TOWN OF BARNSTABLE
PWS ID # 4020004

as a Registered Public Water System in Massachusetts.
Public Water Systems must comply with
the Massachusetts Drinking Water Regulations,
310 CMR 22.00.

Yvette dePeiza, Program Director
Drinking Water Program

Certificate expires December 31, 2024

Please contact the Drinking Water Program if there are any changes in this system.

MassDEP: https://www.mass.gov/massdep-contacts-service-center

Report on Water Quality

The Hyannis Water Board is proud to present its annual water quality report. The statistics in this report are based on testing done throughout 2022 as well as prior years. We hope you will find it helpful to know the sources of your water and the process by which safe drinking water is delivered to your home or business. We have maintained our high standards in an effort to continue delivering the best quality drinking water possible. We remain vigilant in meeting the challenges of source water protection.

Opportunities for Public Participation

We encourage you to share your thoughts with us
on the information contained in this report.
Our meetings are open public meetings.
A schedule of these meetings is posted
on the Town of Barnstable website:
http://www.town.barnstable.ma.us/HyannisWaterBoard/?brd=Hyannis+Water+Board.
Should you ever have questions, we are available to assist you.
Call Hans Keijser, Supervisor,
Water Supply Division at **508 775-0063**

Where Does My Water Come From?

The Hyannis Water System supplies the most densely populated residential and commercial areas of Hyannis, Hyannisport, and West Hyannisport comprising approximately 9 square miles. The water is obtained from 11 groundwater wells that are located in the Town of Barnstable and draw water from the Sagamore Lens, part of the Cape Cod Aquifer. The wells are: Airport # 1 (4020004-10g), Hyannisport Well (4020004-03g), Maher Well # 1 (4020004-07g), Maher Well # 2 (4020004-02g), Maher Well # 3 (4020004-11g), Mary Dunn Well # 1 (4020004-04g), Mary Dunn Well # 2 (4020004-05g), Mary Dunn Well # 3 (4020004-08g), Mary Dunn Well # 4 (4020004-09g), Straightway Well (4020004-12g), and the Simmons Pond Well (4020004-06g).

There are also four water storage tanks. Two located on Mary Dunn Road: Mary Dunn Tank # 1 - 370,000 gallons, Mary Dunn Tank # 2 - 1 million gallons, Maher - 800,000 gallons and Straightway - 400,000 gallons.

Water system interconnections are established with the Town of Yarmouth water system and the COMM. water system to have the ability to draw water as a backup water supply.

Hyannis Water System Operations

United Water Environmental Services began operating the Hyannis Water System on July 1, 2009. As of November 16, 2015 United Water was consolidated under Suez and now Veolia. The operations contract includes operations and maintenance of the water treatment plants and the system's pumping stations, cross connection control services, inspection and maintenance of the distribution system, fire hydrants and gate valves, the complete rehabilitation of two system wells per year, hydrant painting, meter installation and maintenance, customer service, billing and all other duties required for the day to day operations of the public water supply treatment and distribution system. Oversight of the contract is provided by the Barnstable Department of Public Works Water Supply Division.

Office Hours

Monday through Friday 8 AM to 5 PM
Saturday 8 AM to 12 PM

In the event of any emergency call:
(508) 775-0063
Staff is available 24/7

Maintaining Water Quality

The Hyannis Water System continuously strives to produce the highest quality water that meets or surpasses water quality standards for safe drinking water. We monitor all our water sources and distribution system very closely. The standards that we operate under were enacted by the U. S. Congress as the Safe Drinking Water Act in 1974 and amended in 1986 and 1996.

To ensure tap water is safe to drink, the Massachusetts Department of Environmental Protection (DEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by all public drinking water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health regulations establish the limits for contaminants in bottled water to provide the same protection for public health.

The Hyannis Water System meets all primary Water Quality Standards set forth by the United States Environmental Protection Agency and Massachusetts Department of Environmental Protection.

Water Treatment

In our effort to supply safe, clean and healthy water to the Hyannis communities, chemicals are added in safe quantities to ensure that your water quality is consistently maintained.

Many drinking water sources in New England are naturally corrosive (pH of less than 7.0). This can cause active leaching of lead and copper into your water. To reduce this leaching, your water is chemically treated to raise the pH to neutral or slightly alkaline. Testing throughout the Hyannis Water System has demonstrated that this is an effective and safe treatment process.

Past commercial activities near the Hyannis Airport have contributed to the detection of Volatile Organic Compounds (VOCs) in the Maher well field. These chemicals are removed from the water using an aeration process and then adding a disinfectant to the water before it enters the distribution system.

Activated carbon filtration systems are installed on all of the Hyannis Water System wells to remove PFAS contamination.

All chemicals used for the corrosion control are approved for water treatment by one or more of the following organizations: National Sanitation Foundation (NSF International) or Underwriters Laboratory, both accredited by the American National Standards Institute (ANSI). Chemicals also must meet the performance standards established by the American Water Works Association.

Hyannis Water System

The Hyannis Water System is operated and
maintained by a private company, Veolia,
with oversight provided by the Town of Barnstable
Department of Public Works, Water Supply Division.

Questions about this report

Please contact:
Hans Keijser, Supervisor, Water Supply Division
508-775-0063

This report was prepared by Veolia for the Hyannis Water System. Additional copies of this report are available upon request; please contact (508) 775-0063 for additional copies.

Information for Persons with Compromised Immune Systems

Some people are more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC (Center for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the **Safe Drinking Water Hotline (800) 426-4791 or www.epa.gov/safewater/hotline.**

Source Water Assessment and Protection

The Massachusetts DEP has prepared a Source Water Assessment Program (SWAP) Report for the Hyannis Water System. The report assesses the susceptibility of public water supplies to contamination and makes recommendations. This report is available from the Hyannis Water System located at 47 Old Yarmouth Road in Hyannis, the local Board of Health and also at the DEP website: **http://www.mass.gov/dep/water/drinking/sourcewa.htm#reports.**

A susceptibility ranking of HIGH was assigned to all wells in our system by the DEP due to the absence of hydrogeologic barriers, i.e., clay, in the Cape Cod Aquifer. There are activities and land uses within the Zone I, a 400 ft. radius around each well head, and the Zone II, the aquifer recharge area, that can contribute to drinking water contamination. Examples include local roads and power line easements in the Zone I, transportation corridors, residential septic systems, heating oil storage, hazardous materials usage and storage, and stormwater from roads and lawns within the Zone II.

The Hyannis Water System was commended by the Massachusetts DEP for posting water protection signs, acquiring and protecting land within Zone I areas, and working with the Town of Yarmouth to protect Zone II areas.

In conjunction with its certified operator, Veolia, the Hyannis Water System is addressing the concerns stated in the SWAP Report and welcomes your input to our planning. If you have questions, please contact Kevin Sampson at (508) 775-0063

2022 Hyannis Water System improvements

In 2022 the Hyannis Water System's capital improvements dealt with the 12 inch water main replacement on Phinney's Lane in conjunction with the sewer expansion and Vineyard Wind conduit installation project. The water mains at the intersection of Route 28 and Yarmouth Road were replaced as part of the Mass DOT intersection improvements.

Fire Service Installation

How Many Times a Day Do You Turn on the Faucet?

The average American home uses about 100 to 130 gallons of water a day. Did you know that only 1% of our in-home water use is for drinking? The majority of our daily water consumption, about 75%, is used in the bathroom. Did you know that 14% of in-home water use is wasted by leaking taps and toilets? Conserving water is as simple as repairing leaky faucets and toilets, taking shorter showers, not leaving water running while brushing teeth, washing hands, washing fruits and vegetables. Learn more about using water wisely at www.USEPA/WaterSense.

Using water wisely benefits you and the environment.

Este relatório contém informações importantes sobre a água potável. Ter alguém que traduzi-lo para você, ou falar com alguém que entende-lo.

Hyannis Water Board
Samuel Wilson, Chair
Amy Wrightson, Vice-chair
Jonathan Jaxtimer, Member
Louise O'Neil, Member
Timothy Stump, Member

during a snow event in Hyannis

The night-time installation of a 3-way valve cluster

Water testing performed in calendar year 2022

Hyannis Water System
PWS ID: #4020004

WATER QUALITY REPORT

ANNUAL

Hyannis Water System
Operated by Veolia
47 Old Yarmouth Road
Hyannis, MA 02601-0326
(508) 775-0063

SEAL OF THE TOWN OF BARNSTABLE, MASS. 1639. ADOPTED MAY 4 1889

DISTRIBUTION SYSTEM WATER QUALITY

This˙ eport summarizes only those items detected durin†˙samplin†˙˜not all contaminants that are monitored

Microbial Results	Highest % Positive in a Month	Range Detected	MCL	MCLG	Violation	Possible Source of Contamination
Total Coliform Bacteria **	0.0%	˜°	>5% Monthly Samples Positive	0	No	Naturally present in the environment
E.coli (in ground water source) **	1 Positive sample	ND-1	TT	N/A	No	Human and animal fecal waste

***Compliance with the Fecal Coliform / E.coli MCL is determined upon additional repeat testing.**

****Total Coliform:** We were notified on 10/04/2022 of an E.coli positive sample in the raw water sample from Maher well 2 (O2-G). You may remember receiving public notice of this violation on 10/04/2022. Because of this we took Maher Well 2 (O2-G) off-line on 10/04/2022 for one day till the results of the 5 samples were known. ** On 10/04/2022 We took 5 repeat samples at Maher Well 2 (O2-G) for E.coli on 10/04/2022. We were notified by the lab on 10/05/2022 that all 5 samples were absent for E.coli. We were in contact with MASS DEP and they permitted us to put Maher Well 2 (O2-G) back on-line.

. **Health Effects:** Fecal coliform and E. coli are bacteria whose presence indicates that the water maybe contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a health risk for infants, young children, some elderly, and people with severely compromised immune systems.

Lead & Copper	Dates Collected	90th Percentile	Action Level	MCLG	# of Sites samples	# of Sites Above Action Level	Violation	Possible Source of Contamination
Lead (ppm)	˝ ˜ˇ˝ ^^^^^ ˛ ˝ ^^˝ ^^^^	0	0.015	0	30	0	No	Corrosion of household plumbing systems: Erosion of natural deposits
Copper (ppm)	˛ ˝ ˜ˇ˝ ^^^^^ ˛ ˝ ^^˝ ^^^^	0.63	1.3	1.3	30	0	No	Corrosion of household plumbing systems: Erosion of natural deposits

TESTING FOR LEAD - If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. **Hyannis Water System** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

SUMMARY OF FINISHED WATER CHARACTERISTICS

Regulated Contaminants	Date(s) Collected	Highest Detect Value	Range Detected	MCL	MCLG	Violation	Possible Source of Contamination
Inorganic Contaminants:							
Barium (ppm)	4/13/22	0.03	˜° ˛	2	2	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Cadmium (ppm)	4/13/22	ND	˜° ˛	0.004	0.005	No	Corrosion of galvanized pipes;erosion of natural deposits;discharge from metal refineries;runoff from waste batteries and paints
Sodium** (ppm)	4/13/22	76	˜° ˛		20		Road salting; erosion of natural deposits
Arsenic (ppm)	4/13/22	ND	˜˜ ˙˜ˇ ˝001	0.01	0.1	No	Run ff ˛ ˛ ˛ ˇds; nd ˛ glass& elect ˛ nics ˛ duction wastes Erosion ˛˜ natural deposits.
Fluoride (˝)	4/13/22	0.054	˜° ˛	4	4	No	Disc ˝ge ˛ ˛ ertilize˝ and ˝luminum ˝ ˛˜ ies; erosion ˛ n˝ tur˝ l de˛ sits
Selenium (˝)	4/13/22	ND	˜˜ ˙˜ˇ ˝002	0.05	0.05	No	Disc ˝ge ˛ ˛ pet˝ leu ˝ and ˝ ˛ ˛ ˛ fine ies;Erosion o n˝ ur ˝ deposits; Dischar˛ ˜˜om˜° ines
Ni˝ ˜˝ e* (ppm)	10/19/22	4.4	˜˜ -4.4	10	10	No	Runoff from fertilizer use: leaching from septic tanks; sewage; erosion of natural deposits
Perchlorate*** (ppb)	8/3/22	0.25	ˇ˜091-ˇ˜25	2	-	No	Rocket propellants, fireworks, munitions, flares, blasting agents˝ (see note below)*

*Nitrate	Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.
**Sodium	Sodium is a naturally-occurring common element found in soil and water. It is necessary for the normal functioning of regulating fluids in human systems. Some people, however, have difficulty regulating fluid volume as a result of several diseases, including congestive heart failure and hypertension. The guideline of 20mg/L for sodium represents a level in water that physicians and sodium sensitive individuals should be aware of in cases where sodium exposures are being carefully controlled. For additional information, contact your health care provider, your local board of health or the Massachusetts Department of Public Health, Bureau of Environmental Health Assessment at 617-624-5757.
***Perchlorate (Various Chemical Abstract Service Registry Numbers (CASRN) for different chemical species)	Perchlorate interferes with the normal function of the thyroid gland and thus has the potential to affect growth and development, causing brain damage and other adverse effects, particularly in fetuses and infants. Pregnant women, the fetus, infants, children up to the age of 12, and people with a hypothyroid condition are particularly susceptible to perchlorate toxicity. 'J' values are required when the results are above the MDL(0.012) and below the MRL(0.05)

Organic Contaminants:							
Tetrachloroethylene (PCE) (ppb)	02/23/2022-7/19/2022	0.51	˜˜ ˙ˇ˜.51	5	†	No	Discharge from factories and dry cleaners
š˙omodichlorom˛˝hane (ppb)	7/19/22	ND	˜˜	NA	NA	No	š•†produc˜˜of drinking ... ˙ ˝ ˛˜chlorination
Chlorodibromom˛˝hane˜ppb)	7/19/22	ND	˜˜	NA	NA	No	š•†produc˜˜of drinking ... ˙ ˝ ˛˜chlorination
Dibromochloram˛˝hane	7/19/22	ND	˜˜	NA	NA	No	š•†produc˜˜of drinking ... ˙ ˝ ˛˜chlorination
˜° ˛ ˙ ˛ °˝^ ˙ppb)	7/19/22	ND	˜˜ ˙	NA	NA	No	By-product ˛˙ drinking wate°˜chlorination
Chloroform (ppb)	7/19/22	ND	˜˜	ORSG 70	NA	No	By-product of drinking water chlorination
Stage 2 Disinfectants and Disinfection Byproducts							
Chlorine^˜˝˝)	4th Quarte°	’ .91	’š76-’š91	4	4	No	Water additive used to control microbes
TTH•‡˙˙Stage 2) —6tal ˆ6ihalomethanes–˜˜ppb)	Quarterly	8.2	˜˜ -8.2	80	-	No	By-product of drinking water chlorination
HAA5‡˙.tage 2) Haloaceti ˆAcid‡(HAA5) ˜ppb)	Quarterly	1šƒ	NDˆ 1šƒ	60	-	No	By-product of drinking water chlorination (TT)

** Note highest detected value is highest Running Annual Average (RAA). ***Local Running Annual Average

* Note: THM ,HAA and Chlorine minimum and maximum levels in the ranges of results are site specific.

Secondary Contaminants	Date(s) Collected	Highest Detect Value	Range Detected	SMCL	ORSG	Possible Source of Contamination
Magnesiu˝^˜˝˝)	9/27/22	4.1	1.ƒ “š1			Natural Mineral and Organic Matter
Chloride (ppm)	9/27/22	82	NDƒ 2	250	NA	Natural Mineral, Road Salt
Calciu˝^˜˝˝)	9/27/22	13	2.1-13			Natural Mineral and Organic Matter
Coppe°˜˜˝)	9/27/22	0	˜˜	1	-	Naturally occurring element;corrosion of household plumbing
Iron (ppm)	9/27/22	0	˜˜	0.3	NA	Erosion of Natural Deposits, and oxidation of iron components
Manganese (ppm)*	9/27/22	0.04	ˇ˜01-ˇ˜04	0.05	’š‹	Erosion of Natural Deposits
Potassium^˜˝˝)	9/27/22	‹š2	1.“˜ˇ˙2	-		Natural Mineral and Organic Matter
Sulfate (ppm)	9/27/22	19	˜˜ ˙^19	250	250	Natural Sources
Alkalinity (ppm)	9/27/22	16	˜˜ -1“			Natural Sources
Odor (ton)	9/27/22	0	ˇ	3		Naturally occurring organic materials that form ions when in water; seawater influence
Hardness (ppm)	9/27/22	49	12.“^49			Natural Sources
Total Dissolved solids (ppm)	9/27/22	320	220-320	500		Runoff and leaching from natural deposits; seawater influence
PH	9/27/22	7.3	7.2-7.‹	6.5-8.5		Runoff and leaching from natural deposits; seawater influence
Turbidity (NTU)	9/27/22	ND	ND			Soil runoff
Zinc (ppm)	9/27/22	0.11	’š09-’š11	5	NA	Erosion of Natural Deposits, and Industrial Discharge

*EPA has established a lifetime health advisory (HA) for manganese at 0.3ppm and an acute at 1ppm

UCMR3 EPA unregulated contaminants	Date(s) Collected	Highest Detect Value	Range Detected	Average Detected	ORSG	Possible Source of Contamination
1,4-Dioxane (ppb)	Quarterly(2022)	0.23	ND - 0.23	0.060	0.3 ppb	Solvent or stabilizer used in processing of paper, cosmetics, shampoos, coolant

Third Unregulated Contaminant Monitoring Rule (UCMR3)
IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER - Availability of Monitoring Data for Unregulated Contaminants for Hyannis Water System
As required by US Environmental Protection Agency (EPA), our water system has sampled for a series of unregulated contaminants. Unregulated contaminants are those that don't yet have a drinking water standard set by EPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a public health protection standard. As our customers, you have a right to know that these data are available. If you are interested in examining the results, please contact Hans Keijser at (508) 775-0063 or 47 Old Yarmouth Road Hyannis, MA 02601.
This notice is being sent to you by the Hyannis Water System. State Water System ID#: 4020004.
For more information visit the AWWA FAQ UCMR 3 link: http://www.drinktap.org/home/water-information/water-quality/ucmr3.aspx

CCR Regulated Chart for PFAS detects in 2022

Regulated Contaminant	Date(s) Collected	Range Detected ppt	Average Detected ppt	MCL ppt	Possible Source of Contamination	Health Effects
PFOS, PFOA, PFNA, PFHxS, PFHpA,PFDA	Quarterly	ND	0.23 *	20	Man-made chemicals. Used as surfactants to make products stain or water resistant, in fire-fighting foam, for industrial purposes, and as a pesticide. Used in fluoropolymers (such as teflon) cosmetics, greases and lubricants, paints, adhesives and photographic films. PFOS U.S. manufacturing phased out in 2002; PFOS may still be generated incidentally or in imported products.	Long-term exposure to PFOS and PFOA in drinking water may affect the liver, cholesterol and thyroid hormone levels. Some studies indicate that exposure to elevated levels of PFOS and PFOA could cause immunological effects, developmental effects and some types of cancer in laboratory animals. Scientists are working to better understand the degree of risk to people. Based on studies of laboratory animals and chemical similarity to PFOS and PFOA depending on the level and length of exposure, PFNA, PFHxS, PFHpA and PFDA in drinking water may affect the liver, cholesterol levels, thyroid and immune system and may cause developmental effects.
PerfluoroHexanoic (PFHxA)	Quarterly	ND-4.38	0.96	**	Man-made chemical; used in products to make them stain, grease, heat and water resistant.	Based on studies of laboratory animals, people exposed to elevated levels of PFHxA for several years could experience effects on the liver. It is less toxic and is cleared from the body much faster than PFOS, PFOA and other longer-chain PFAS.

On October 2, 2020, the Massachusetts Department of Environmental Protection (MassDEP) published final regulations establishing a drinking water standard, or a Maximum Contaminant Level (MCL), for the sum of six per- and polyfluoroalkyl substances (PFAS). The MCL is 20 parts per trillion (ppt) for what the regulations call PFAS6, or the sum of six PFAS compounds: perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluoroheptanoic acid (PFHpA), and perfluorodecanoic acid (PFDA). PFAS are a family of chemicals widely used since the 1950s to manufacture common consumer products. They have been linked to a variety of health risks, particularly in women who are pregnant or nursing, and in infants. In using the sum of six PFAS compounds, the new standard protects public health for sensitive subgroups including pregnant women, nursing mothers and infants. Please consult your health practitioner if you have any health related questions. For a consumer factsheet on PFAS see: https://www.mass.gov/doc/massdep-fact-sheet-pfas-in-drinking-water-questions-and-answers-for-consumers/download

* Running Annual Average** There is no ORS Guidline or UCMR3 reference concentration health benchmark for this compound. However, the Minnesota Department of Health established a drinking water guidance value of 2,000 ppt for PFBS. See http://www.health.state.mn.us/divs/eh/risk/guidance/gw/pfbsinfo.pdf. EPA also has draft toxicity assesments for PFBS at https://www.epa.gov/pfas/genx-and-draft-toxicity-assesments

SAFE DRINKING WATER ACT – WATER QUALITY STANDARD DEFINITIONS

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

HA: Health Advisory.

Massachusetts Maximum Contaminant Levels (MMCL): The Massachusetts maximum contaminants listed in the drinking water regulations consist of promulgated US EPA MCLs which have become effective, plus a few MCLs set specifically by Massachusetts.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Minimum Detection Limit (MDL): Is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte is greater than zero.

Secondary Maximum Contaminant Level (SMCL): These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of disinfectant is necessary for control of microbial contaminants

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectant to control microbial contamination.

Primary Standards: Federal drinking water regulations for substances that are health-related. Water suppliers must meet all primary drinking water standards.

Secondary Standards: Federal drinking water measurements for substances that do not have an impact on health. These reflect aesthetic qualities such as taste, odor and appearance. Secondary standards are recommendations, not mandates.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Massachusetts Office of Research and Standard Guideline (ORSG): This is the concentration of a chemical in drinking water, at or, below which, adverse, non-cancer health effects are unlikely to occur after chronic (lifetime): exposure. If exceeded, it serves as an indicator or the potential for further action.

Third Unregulated Contaminant Monitoring Rule (UCMR3): As required by US Environmental Protection Agency (EPA), our water system has sampled for a series of unregulated contaminants. Unregulated contaminants are those that don't yet have a drinking water standard set by EPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a public health protection standard.

KEY

CU: Color unit.

NA: Not applicable.

ND: Not detected.

Ug/L: Micrograms per liter=ppb

ppb: Parts per billion. The equivalent of one second in 32 years.

ppm: Parts per million. The equivalent of one second in 12 days.

ppt: Parts per trillion.

pCi/L: Picocuries per liter. The Equivalent of one second in 32 million years.

NTU: Nephelometric Turbidity Unit.

TON: Threshold Odor Number.

TI: Treatment Technique.

Water Source Characteristics

The sources of drinking water (for both tap and bottled water) include rivers, lakes, streams, ponds, springs, reservoirs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and, in some cases, radioactive materials, and can pick up substances resulting from the presence of animals or human activity.
Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewer treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production. These contaminants can also come from gasoline storage, urban storm water runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil or gas production and mining activities.

For Your Information

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.
Where to go for more information: The Massachusetts DEP at (617) 292-5885 or www.state.ma.us/dep or the Massachusetts Drinking Water Education Partnership at www.madwep.org.

Final Environmental Impact Report
EEA No. 16640

CAPE COD GATEWAY AIRPORT

MASTER PLAN IMPROVEMENT PROJECTS

APPENDICES A-J

Epsilon ASSOCIATES INC.

September 16, 2024

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Appendix D

Spill Prevention, Control, and Countermeasure Plan

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Sandwich, MA • 02563
Phone - 508-833-6600 • Fax - 508-833-3150 • *www.horsleywitten.com*

Spill Prevention, Control, and Countermeasure Plan

Barnstable Municipal Airport
Hyannis, Massachusetts

Revision 4, April 2020

Barnstable AIRPORT HYANNIS

Prepared for:

Barnstable Municipal Airport
480 Barnstable Road
Hyannis, Massachusetts 02601

Job # 14105

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS
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PREFACE - I

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
EMERGENCY ACTION PLAN

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

This Emergency Response Action Plan has been developed for the Barnstable Municipal Airport, 480 Barnstable Road, Hyannis, Massachusetts 02601 as a guide to assist in the response to releases of oil and/or hazardous materials to the environment.

1.0 EMERGENCY NOTIFICATION PHONE LIST

National Response Center (to report a release to navigable waters)
24-Hour Call Center: 800-424-8802

Massachusetts Department of Environmental Protection Emergency Response Center
24-Hour Call Center: 888-304-1133

Massachusetts State Police / Hyannis Fire Department
24-Hour Call Center: 911

Airport Rescue and Fire Fighting
24-Hour Call Center: 508-778-7770

Barnstable Fire District Water Department
(To report a spill on Water Dept. property located north of 15/33)
Office: 508-362-6498
Supt. Thomas Rooney (24-Hour): 508-364-9359

The Barnstable Municipal Airport Emergency Response Personnel include the following:

Spill Response Program Manager:

Katie Servis
Airport Manager
Barnstable Municipal Airport
508-775-2020

PREFACE – I

(continued)

Spill Response Coordinator:

Robert Holzman
Operations Supervisor
Barnstable Municipal Airport
508-778-7770 (24-hour contact number)

Local consultants and contractors to contact for spill response:

Licensed Site Professional:

Horsley Witten Group, Inc.
90 Route 6A
Sandwich, Massachusetts
508-833-6600

Bryan Massa, LSP
24-Hour Contact Number: 781-243-1527

Mark Nelson, LSP
24-Hour Contact Number: 508-566-0912

Spill Response Contractors:

Clean Harbors	800-645-8256
Moran Environmental Recovery	888-233-5338
Global Remediation	508-828-1005

Spill Response Materials/Equipment

A rapid spill response trailer is maintained at the Airport ARFF/SRE Building; a complete inventory of the trailer's contents is included as Appendix F in the SPCCP. Inventories are conducted regularly, and out-of-date equipment is replaced. A smaller spill kit is also maintained on each of the Airport's Mobile Refuelers, at the Gate F Fuel Farm, and at the Airport ARFF/SRE Building waste oil and anti-freeze storage AST. Each tenant involved in the storage or transfer of fuel is responsible for maintaining their own spill response resources on each of their vehicles and at fuel storage locations.

PREFACE – I

(continued)

2.0 IMMEDIATE ACTIONS

Spill response actions may include the following (as personnel safety allows)

1) Initiate evacuation, if necessary.
2) Notify Federal and State Emergency Response Personnel (see Section 1.0).
3) Stop spill flow when possible without risk of personal injury.
4) Contain the spill using whatever means readily available.
5) Make the spill location off limits to unauthorized personnel.
6) Restrict all sources of ignition when flammable substances are involved.
7) Report the release to the appropriate regulatory agencies (MassDEP, Fire Department, Airport Operations).

PREFACE – I

(continued)

3.0 RELEASE NOTIFICATION FORM

A. <u>Incident Description</u>

Date:_____ Reporter:_____
Time of Incident:_____ Time of Report:_____
Facility Name:_____
Facility Telephone #:_____
Location of Release:_____
Facility Location:_____
Street Address:_____
City/Town:_____

B. <u>Release Description</u>

Type of material(s) released:_____
Estimated quantity released:_____
Were there injuries to anyone on site?:_____
Did the release impact a catch basin or storm drain?:_____
Describe the ground surface that the release occurred over:_____
_____
Did the release enter or travel along underground utilities (pipes, conduit, etc.)?:
_____
How did the release occur?_____
_____
Other details:_____
_____

Are any surface waters impacted, or in danger of being impacted?
_____
_____

C. <u>Spill Response Program Notification Requirements</u>

<u>IN THE EVENT OF ANY RELEASE, NOTIFY:</u>

PROGRAM MANAGER KATIE SERVIS 508-775-2020

SPILL RESPONSE COORDINATOR ROBERT HOLZMAN 508-778-7770

BARNSTABLE MUNICIPAL AIRPORT RESCUE AND FIREFIGHTING 508-778-7770

PREFACE – I

(continued)

IF RELEASE IS LOCATED ON WATER DEPT. PROPERTY NORTH OF 15/33, NOTIFY:

SUPT. THOMAS ROONEY 508-364-9359

D. State and Federal Notification Requirements

Does Massachusetts Department of Environmental Protection (MassDEP) Require Notification?

- **A release of ≥ 10 Gallons Gas/Diesel/Oil requires MassDEP Notification**
- **A release of an unknown quantity requires MassDEP notification**

If required, notify Massachusetts DEP at 888-304-1133*

Does the USCG/Federal National Response Center (NRC) Require Notification?

- **A discharge to navigable waters requires USCG/NRC notification**
- **A sheen on water surface is considered a harmful quantity**

If required, notify USCG/NRC at 800-424-8802*

* **record any instructions/information from MassDEP or NRC in the space provided below.**

E. Generator Information

Generator/Responsible Party: _____
Street Address: _____
City/Town: _____State:_____
Contact Person: _____Title: _____
Contact Telephone Number: _____

F. Documentation of Notification
(Record time of agency/contact notification, instructions, reporting number, etc. here)

_____
_____
_____
_____
_____
_____

PREFACE – I

(continued)

4.0 REPORTABLE CONDITIONS

In accordance with Commonwealth of Massachusetts regulations, 310 CMR 30 and 310 CMR 40.0000, a release or threat of a release of a reportable quantity of oil and or hazardous materials must be reported to the MassDEP within two hours of obtaining knowledge of the release. Under MassDEP regulations 310 CMR 40.0000 a release of oil of **10-gallons or greater** is considered reportable. Contaminants detected in the environment at or above a certain concentration require reporting to the MassDEP, are listed in 310 CMR 40.1600. Refer to Appendix E of the Airport's SPCCP for forms to be completed during a spill event.

Federal reportable quantities for releases into soil, water and air are listed in Table 302.4 of 40 CFR 302.4. Each regulatory agency has these reportable quantities posted on its website (www.state.gov/dep; and www.epa.gov).

PREFACE - II

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN APPROVAL AND CERTIFICATION

BARNSTABLE MUNICIPAL AIRPORT HYANNIS, MASSACHUSETTS

MANAGEMENT APPROVAL

This oil and hazardous substances Spill Prevention, Control, and Countermeasure Plan and attached Emergency Response Action Plan has been carefully reviewed by Barnstable Municipal Airport Management. Management concurs with and supports the programs and procedures which are to be implemented, periodically reviewed, and updated in accordance with Federal Regulation 40 CFR 112.

Signature: _____

Katie Servis
Spill Response Program Manager
Airport Manager
Barnstable Municipal Airport

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I am familiar with the provisions of Federal Regulation 40 CFR 112 and attest that the Spill Prevention, Control, and Countermeasure Plan has been prepared in accordance with reasonable and prudent engineering practices, and satisfies the current requirements of the aforementioned regulation.

Name: Richard A. Claytor, Jr., P.E.

Signature: _____

Date: 4-29-2020

Registration Number: 45116

x

PREFACE - III

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
RECORD OF CHANGES

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

This Spill Prevention, Control, and Countermeasure Plan has been prepared for the Barnstable Municipal Airport. No alteration or revision shall be made to any part of this plan except at the direction of the Spill Response Program Manager. The Program Manager shall update this plan as required, and shall ensure the timely update of all facility plans.

Date	Revision Number	Section and Pages Changed	Author of Revision	Approved By
10/06	1	Plan Update	Horsley Witten Group, Inc.	FS
7/10	2	Tenant List Update	Horsley Witten Group, Inc.	FS
12/13	3	Plan Update	Horsley Witten Group, Inc.	FS
04/20	4	Plan Update	Horsley Witten Group, Inc.	KS

PREFACE - IV

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
REGULATORY CROSS-REFERENCE WITH 40 CFR 112

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

Regulatory Provision	Regulatory Requirement	Location in SPCCP
112.3 (d)	Professional Engineer Certification	Preface II
112.3 (e)	Location of SPCC Plan	Section 2.0
112.5	SPCC Plan review and amendment	Section 3.0
112.7	Facility Management approval	Preface II
112.7	Cross reference with 40 CFR 112	Preface IV
112.7 (a)(1)	Discussion of Facility conformance	Section 1.0
112.7 (a)(2)	Deviation from plan requirements	Not Applicable
112.7 (a)(3)	Facility physical layout and facility	Section 7.0,
112.7 (a)(3)(i)	Oil storage containers	Sections 8.0, 9.0 Figures 2 and 3
112.7 (a)(3)(ii)	Discharge prevention measures	Section 10.0
112.7 (a)(3)(iii)	Discharge or drainage controls	Section 10.0
112.7 (a)(3)(iv)	Countermeasures for discharge discovery, response, and cleanup	Section 12.0, 14.0
112.7 (a)(3)(v)	Methods of disposal of recovered	Section 12.1.1
112.7 (a)(3)(vi)	Emergency contact list	Section 13.1,
112.7 (a)(4)	Discharge reporting	Section 13.0,
112.7 (a)(5)	Discharge response procedures	Section 12.0
112.7 (b)	Potential discharge volumes and direction	Section 8.0, 9.0,
112.7 (c)	Containment and diversionary structures	Section 8.0, 9.0,
112.7 (d)	Demonstration of impracticability of secondary	Not Applicable
112.7 (e)	Inspections, Tests, and Records	Section 15.0

PREFACE – IV

(continued)

Regulatory Provision	Regulatory Requirement	Location in SPCCP
112.7 (f)(1)	Oil handling personnel trained in operation and maintenance of facility equipment to avoid a discharge, discharge procedures, applicable laws and regulations, and contents of SPCC Plan	Section 4.0
112.7 (f)(2)	Designate personnel at each applicable facility responsible for SPCC Plan compliance	Section 2.0
112.7 (f)(3)	Discharge prevention briefings for all oil-handling personnel	Section 4.0
112.7 (g)(1)	Applicable areas fully fenced when unattended	Section 7.3
112.7 (g)(2)	Flow and drain valves secured in closed position when not in operation	Appendix B
112.7 (g)(3)	Transfer controls secured in closed position when not in operation, accessible only by authorized personnel	Appendix B
112.7 (g)(4)	Transfer systems capped when not in operation	Appendix B
112.7 (g)(5)	Adequate facility lighting to observe a discharge and prevent vandalism	Section 7.3
112.7 (h)(1)	Quick drainage systems in lieu of catchment basin	Not Applicable
112.7 (h)(2)	Warning system to prevent vehicle departure prior to complete disconnection of flexible or fixed transfer lines	Appendix B
112.7 (h)(3)	Inspection of all transfer connections on vehicle prior to transfer	Appendix B
112.7 (i)	Brittle fracture evaluation	Section 15.5
112.7 (j)	Compliance with Applicable State and Local Requirements	Section 1.0
112.8 (b)	Facility drainage	Section 7.5
112.8 (c)(1)	Bulk storage container construction	Section 8.0, 9.0

PREFACE – IV

(continued)

Regulatory Provision	Regulatory Requirement	Location in SPCCP
112.8 (c)(2)	Secondary containment	Section 8.0, 9.0, 10.0
112.8 (c)(3)	Drainage of diked areas	Section 7.5
112.8 (c)(4)	Corrosion protection	Section 8.0
112.8 (c)(5)	Partially buried and bunkered storage tanks	Not Applicable
112.8 (c)(6)	Inspection and testing of aboveground storage tanks	Section 15.0
112.8 (c)(7)	Heating coils	Not Applicable
112.8 (c)(8)	Overfill prevention devices	Section 8.0
112.8 (c)(9)	Effluent treatment facilities	Not Applicable
112.8 (c)(10)	Visible discharges	Appendix B
112.8 (c)(11)	Mobile and portable containers	Section 8.0, 9.0
112.8 (d)	Transfer operations, pumping and in-plant	Section 8.0
112.20 (e)	Certification of Substantial Harm Determination	Appendix A

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

1.0 INTRODUCTION

Code of Federal Regulations 40, Subpart 112 (40 CFR 112) provides guidance for the development of Spill Prevention, Control, and Countermeasure Plans (SPCCP) and establishes procedures and methods to prevent the discharge of oil from non-transportation-related facilities into surface waters and adjoining shorelines. Additionally, Massachusetts State regulations (310 CMR 30.521(4)) require SPCCPs, with added requirements to comply with State 310 CMR 30 Hazardous Waste regulations. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Regulation 40 CFR 300.3, and the Resource Conservation and Recovery Act (RCRA) Regulation 40 CFR 264.52 expand the scope of the SPCCP to incorporate hazardous materials as defined in 40 CFR 302.3.

An SPCCP must be written and certified for an installation or commercial entity when both of the following criteria are met:

1. There is a reasonable potential for discharging oil into or upon navigable waters of the United States; and
2. The oil storage capacity on-site exceeds either:
    a. 42,000-gallons of total underground storage, or
    b. 1,320-gallons of total above-ground storage, or any single container having a capacity in excess of 660-gallons.

This SPCCP has been prepared for the Barnstable Municipal Airport, 480 Barnstable Road, Hyannis, Massachusetts 02601 (the "Airport"), due to the following:

1. There is a reasonable potential for discharging oil into or upon the waters of the United States, and
2. Above-ground fuel storage capacity exceeds 1,320-gallons, with a single container having a capacity in excess of 660-gallons.

2.0 SPCCP IMPLEMENTATION

This SPCCP is to be implemented by Airport employees and tenants. The Spill Response Program Manager (Program Manager) and Spill Response Coordinator (Coordinator) are

responsible, to the greatest extent possible, for ensuring employee and tenant awareness, program participation, and operational compliance with the guidelines provided in this SPCCP. Copies of the SPCCP are to be maintained in the Barnstable Municipal Airport (Airport) Management Office within the Main Terminal, the Aircraft Rescue and Fire Fighting/Snow Removal Equipment (ARFF/SRE) Building, and with the tenants identified in Section 7.2.

Spill Response Program Manager:
Katie Servis
Airport Manager
Barnstable Municipal Airport
508-775-2020

Spill Response Coordinator:
Robert Holzman
Operations Supervisor
508-778-7770 (24-hour contact number)

Effective spill prevention and response management is best facilitated through the designation of a Response Team representative (typically an owner, manager, or supervisor) for each Airport tenant operation involving the storage, transfer, or use of oil and/or hazardous materials (OHM). Response Team representatives are responsible for personnel training and maintaining operational compliance with the guidelines established in this SPCCP and described in further detail in Section 4.0 of this plan.

3.0 SPCCP REVIEW

If there is a change in the facility design, construction, operation, or maintenance which materially affects the potential for discharge of OHM into surface waters and adjoining shorelines, this SPCCP shall be amended in accordance with 40 CFR, parts 112.5 and 112.7. Amendments shall be implemented no later than 6 months after such changes occur. The Program Manager shall review and evaluate the SPCCP every five years. The Program Manager shall amend the SPCCP within 6 months of the five-year review to include more effective prevention and control technology, if available. No amendment to this SPCCP shall be effective to satisfy these requirements unless it has been certified by a Professional Engineer in accordance with 40 CFR 112.3(d). Statements of Airport Management Approval and Professional Engineer Certification, and a SPCCP Revision Log are included as prefaces to this plan. Amendments which do not significantly alter the potential for a discharge to occur, such as name and address revisions, do not require an Engineer's certification, however, all revisions shall be recorded in the SPCCP Revision Log.

4.0 RESPONSE TEAM DESIGNATION AND PERSONNEL TRAINING

The Coordinator shall designate a Response Team representative for each Airport tenant operation that involves the transport, use, or storage of OHM. Response Team members, along with the Coordinator, will be responsible for ensuring spill awareness among Airport and tenant employees, and operational compliance with the provisions of this SPCCP.

At a minimum, OHM-handling personnel shall be trained in the operation and maintenance of related facility equipment, facility discharge procedures, applicable laws and regulations, and the contents of the SPCCP. On an annual basis, the Coordinator shall conduct Discharge Prevention briefings for all oil-handling personnel, and include discussions of the SPCCP, any discharges within the past year, or changes to the Airport that might affect the potential for a discharge.

No provisions within this SPCCP, expressed or understood, relieve any tenant from providing response training to their employees, as required by Local, State and Federal regulations. Each Response Team Member shall provide the Coordinator with 24-hour contact information for inclusion in Section 7.2, and in the Airport's Emergency Response Action Plan (ERAP), described in Section 11.0.

5.0 SPCCP LIMITATIONS

This SPCCP provides information critical to the prevention of, and response to, releases of OHM at the Airport, and includes discussions of tenant operations, storage facilities, and transfer procedures. The Airport assumes no liability or responsibility for tenant operational compliance with applicable Local, State, and Federal Regulations, including the requirements established in 40 CFR 112, and described in this SPCCP. Tenants required to prepare and implement a SPCCP shall do so independently of this SPCCP.

6.0 APPLICATION OF SUBSTANTIAL HARM CRITERIA

Appendix C of 40 CFR 112 requires a facility to determine whether or not their facility is considered a "substantial harm facility." Certification of the applicability of the substantial harm criteria for the Airport is included as Appendix A. Substantial harm facilities are required to submit a Facility Response Plan to the Environmental Protection Agency's (EPA) Regional Administrator. The Airport is not considered a "substantial harm" facility and as such is not required to submit a Facility Response Plan to the EPA Regional Administrator.

7.0 FACILITY INFORMATION

7.1 Facility Description and Operations

The Airport provides commercial airline service and general aviation services to Boston, Cape Cod and the Islands of Martha's Vineyard, and Nantucket. The Airport began operations in 1928 and is the third largest and busiest airport in the Commonwealth of Massachusetts.

The Airport property consists of approximately 645 acres, approximately 142 are paved for use as taxiways, runways, and parking aprons. The Airport is bordered to the south by Barnstable Road (Route 132), to the west by Yarmouth Road, to the north by Route 6, and to the east by an industrial park (Independence Park). A locus map is included as Figure 1 and an aerial photograph identifying OHM storage locations at the Airport is included as Figure 2. Structures on Airport property include the Main Terminal and Air Traffic Control Tower (ATCT), several service and storage hangars, tenant facilities, and the Airport Rescue and Fire Fighting/Snow Removal Equipment Building (Airport ARFF/SRE). Airport property and structures located along runways 6 and 15 are commonly referred to as the East and North Ramps, respectively. A site plan detailing the structural layout of the Airport including stormwater drainage patterns and locations is included as Figure 3.

More than 40 tenant businesses operate on Airport property, providing industry-related services. Normal tenant operations include the maintenance and servicing of aircraft and associated aviation equipment, aviation fuel transfer, and general facility maintenance. Operations related to aircraft maintenance include engine maintenance, electronics repair, hydraulic system repair, aircraft washing, body repair, aircraft de-icing, and wheel and tire maintenance and repair. Ground vehicle operations and maintenance includes fluid changes, filter changes, refueling, brake repair, interior and exterior reupholstering, body repair, minor painting, and washing.

Airport Operations and Maintenance responsibilities include fuel transfer, traffic control, airport security, equipment operation and maintenance, facility maintenance and grounds-keeping. OHM use and storage at the Airport includes aviation fuel, gasoline, diesel, lubrication oil, motor oil, waste oil, deicing solutions, anti-freeze, paints, industrial chemicals and adhesives, compressed gases, solvents, and cleaning solutions.

Facilities maintenance operations include structural maintenance and repairs, airfield lighting and marking maintenance, painting, mowing, snow removal, and utility maintenance.

7.2 Tenant and Airport Operations Information

Current Airport Operations and tenant contact information are presented below.

Robert Holzman
Airport Operations Supervisor
480 Barnstable Road - 2nd Floor
Hyannis, MA 02601
508-778-7770

Helyne Medeiros
Rectrix Aerodrome Center, Inc.
Box 13 - 730 Barnstable Road
Hyannis, MA 02601
508-771-7520

Hildie Rios
Aviation Fuel Coordinator
480 Barnstable Road
Hyannis, MA 02601
508-778-7770

John Cahill
Hertz Car Wash
480 Barnstable Road
Hyannis, MA 02601
508-775-5825

Brad Everson
Airport Rescue Fire Fighting Coordinator
480 Barnstable Road - 2nd Floor
Hyannis, MA 02601
508-778-7770

Jody Lewis
Allies Air
550 Barnstable Road
Hyannis, MA 02601
508-364-5786

Robert Griffin
Griffin Avionics
630 Barnstable Road
Hyannis, MA 02601
508-771-2638

Peter Farrell
Cape Air / Nantucket Airlines
660 Barnstable Road
Hyannis, MA 02601
508-790-3122

Peter Greaves
AMA Nantucket Inc.
130 Mary Dunn Way
Hyannis, MA 02601
508-771-8273

Cape Flight Instruction
Edmund Cottle
150 Mary Dunn Way
Hyannis, MA 02601
508-274-2424

7.3 Facility Security

The Airport is manned on a 24-hour basis. Airport security is maintained through several means. Access to Airport property is restricted by a perimeter fence which is inspected daily. Unsupervised entry within the perimeter fence is limited to approved personnel who carry Airport-assigned identification. Facility security staffing includes personnel from Airport Security, the Hyannis Police Department, and the Transportation Security Administration (TSA). All fuel transfer and storage areas are located within the

main perimeter fence and access to these areas is therefore restricted to approved personnel. The Airport's Gate F Fuel Farm facility is also surrounded by an additional security fence and can only be accessed by approved personnel. The fuel transfer facility, Gate F Fuel Farm, and overnight staging areas for mobile refuelers are equipped with adequate lighting to aid in the observation of a release and deter any acts of vandalism.

7.4 Wastewater Management

With the exception of the ARFF/SRE building (Figure 3), all tenant facilities located on the East Ramp currently discharge sanitary wastewater to on-site septic systems. The ARFF/SRE building, South Ramp Deicing Pad and all structures located on the North Ramp of the Airport, including the Main Terminal, ATCT, and all other tenant facilities (Figure 3) discharge wastewater including sanitary waste to the Barnstable Wastewater Treatment Facility. Oil/water separators (O/WS) are located at the ARFF/SRE building, South Ramp Deicing Pad, Griffin Avionics, and Cape Air/Nantucket Air hangar and provide pre-treatment of floor drain discharge from each facility prior to discharge to the Barnstable Wastewater Treatment Facility. The Avis and Hertz Car Wash, located south of Barnstable Road on Airport property, also utilize O/WS to pre-treat vehicle wash-water that is subsequently discharged to the Barnstable Wastewater Treatment Facility. The locations of these tenants are included on Figure 3.

7.5 Stormwater Management

Stormwater management at the Airport is provided through several systems. The majority of paved surfaces within the perimeter fence, including all runways, discharge stormwater to a system that transports stormwater to one of two surface water bodies located on Airport property, Upper Gate and Lewis ponds (Figure 3). A number of catch basins are not connected to the main drainage system, and infiltrate stormwater at their respective locations or discharge stormwater to infiltration basins. A site plan, identifying Airport drainage areas, stormwater conveyances, surface water outfalls, and retention basins is included as Figure 3. O/WS used to pre-treat stormwater are located at the Gate F Fuel Farm and prior to Outfall A. Vortech® water quality units located prior to each of the outfalls discharging to Upper Gate and Lewis ponds provide pretreatment to all stormwater discharged to the ponds. Calculated total suspended solid (TSS) removal rates for the water quality units range from 81% to 87%. Since the installation of the Vortech® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

7.6 Spill History

Facilities having experienced one or more spills within a year of the effective date of the SPCCP are required to describe each spill, any corrective actions taken, and plans for preventing recurrence. Two spills have occurred at the Airport in 2019, as described below. No other spills have occurred at the Airport within the past five years of the effective date of this plan (April 2020).

- In November 2019, a release of 51 gallons of Jet A fuel occurred at the Gate F Fuel Farm from a hand operated pump located within the concrete secondary containment structure (Figure 2). The hand pump was not fully closed after the previous use and was the source of the release. Due to a storm drainage valve being opened, the release drained from the secondary containment structure into an O/WS. Airport personnel responded to the spill and applied absorbents. Airport personnel notified the fire department and the MassDEP within two hours of identifying the release. Clean Harbors and a Licensed Site Professional responded to the release and pumped out and cleaned the O/WS, recovered absorbents, and cleaned the interior of the concrete secondary structure with a citrus based degreaser. The release was contained by the concrete secondary containment and the OW/S and there was no discharge of pollutants to stormwater and/or surface waters. Due to this incident, a new procedure was implemented by the Airport on November 26, 2019 for the operation of the hand pump and storm water drain value at the fuel farm. The new procedure is as follows:

<u>Hand Pump Operation</u>

- Prior to hand pump usage by Airport staff, verify that the stormwater drain valve located adjacent to the secondary containment structure is in the closed position.
- Operate hand pump as necessary to obtain fuel sample.
- After sample collection, verify hand pump is in the closed position.

<u>Stormwater Drain Valve Operation</u>

- Inspect the concrete secondary containment pad and both interior drainage sumps for visual and olfactory evidence of OHM. Collect a representative sample of accumulated rainwater in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the secondary containment is assumed to be free of OHM.
- Next, open the first manhole cover (marked “DRAIN”) in front of the Gate F Fuel Farm located between the storm water valve and the fuel farm. Cones

or other means to mark the open hole must be utilized. Collect a representative sample of accumulated rainwater from within the manhole in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the drain manhole is assumed to be free of OHM. The adjacent drain valve should then be opened, and the Airport staff member will monitor the draining of the open manhole and secondary containment as the water moves into the adjacent O/WS prior to discharging into the stormwater system.

  - Once the draining of the open manhole and secondary containment is completed, the drain valve is to be closed. Additionally, the manhole is to be closed.

- On December 21, 2019 a release of one to two gallons of jet fuel occurred at the Rectrix Aerodrome Center Hanger while refueling a Hawker 827TX aircraft (Figure 2). The release occurred to the asphalt paved ground surface from venting of the right wing. Rectrix personnel responded to the spill immediately by placing granular absorbents and using pads to mop up the spilled jet fuel and notified the Airport. The absorbent and pads were placed into a 55-gallon drum for future off-site disposal. The release was contained to the asphalt pavement and there was no discharge of pollutants to stormwater and/or surface waters. Considering the nature of the release, no change to the fueling procedures or release response is necessary.

8.0 STORAGE AND TRANSFER OF FUEL

Significant volumes of virgin petroleum are stored at several locations at the Airport within storage tanks. Details concerning virgin petroleum storage are provided in Table 1 and Table 2, and locations are set forth on Figures 2. The Airport is also subject to the requirements in Federal Aviation Administration (FAA) Advisory Circular 150/5230-4, Aircraft Fuel Storage, Handling, and Dispensing on Airports.

Table 1. Barnstable Municipal Airport Virgin Petroleum Storage

Operator	Location	Product	Tank Type	Spill Protection	Volume (Gallons)
Rectrix / Air Cape Cod	Gate P Fuel Farm	Avgas[3]	AST[1]	Overfill protection, double walled tanks, interstitial monitoring	10,000
		Jet A			10,000
Griffin Avionics	Griffin Fuel Island	Avgas[3]	UST[2]	Overflow protection, leak detection, double walled piping with sumps/sensors, and line leak detection	(2) 10,000
Cape Air	Inside Cape Air Hangar	Avgas[3]	Portable AST[1]	Spill Containment Pallet	100

Operator	Location	Product	Tank Type	Spill Protection	Volume (Gallons)
Hertz Car Rental	Barnstable Road – Service Lot	Unleaded Gasoline	UST	Double walled, In tank monitor	10,000
Barnstable Municipal Airport	Gate F Fuel Farm	Unleaded Gasoline	AST	Overfill protection, concrete secondary containment, interstitial monitoring	4,000
		Diesel	AST		4,000
		Jet A	AST	Overfill protection, concrete secondary containment pad, double walled tanks, interstitial monitoring	(3) 20,000

Notes:

[1] Aboveground Storage Tank

[2] Underground Storage Tank

[3] Aviation Gas

Virgin petroleum products are transported by Airport and tenant mobile refuelers for the purpose of refueling aircraft. Fuel delivery and transfer procedures are described in greater detail in Sections 8.1 and 8.2. Specific characteristics of each mobile refueler are provided in Table 2, below.

Table 2. Barnstable Municipal Airport Mobile Refuelers

Operator	Product	Spill Prevention Equipment	Truck Designation	Storage Capacity (Gallons)
Barnstable Municipal Airport	Jet A	All mobile refuelers are equipped with absorbents, drip pans, magnetic catch basin covers, and oil booms to respond to the most likely quantity of oil that could be discharged (<10 gallons) during refueling activities	5249	5,000
			5250	5,000
			5251	3,000
Rectrix / Air Cape Cod	Avgas		44219	1,500
Rectrix Aerodrome	Jet A		5693	3,000
Cape Air	Avgas		4298	1,500
Griffin Avionics	Avgas		612	620
			4134	1,200

8.1 Fuel Delivery

Detailed fuel delivery procedures for the Airport are included as Appendix C and are described in general below.

8.1.1 Jet A Fuel

Jet A fuel is currently stored at the Airport's Gate F Fuel Farm in three 20,000-gallon ASTs, and at Rectrix / Air Cape Cod's Gate P Fuel Farm in a 10,000-gallon AST. Details concerning spill protection are included above in Table 1. Vendor delivery of Jet A fuel at the Gate F Fuel Farm is coordinated and supervised by Airport personnel; fuel delivery at the Gate P Fuel Farm is coordinated and supervised by Rectrix / Air Cape Cod personnel. Flexible transfer lines, used for connecting fuel delivery trucks to the above-ground transfer manifolds at both locations, are inspected prior to each fuel transfer, and are replaced as necessary. Fuel deliveries are generally made during daylight hours; however, after-hours deliveries are conducted when necessary. Direct communication between the refueling agent and Airport personnel is maintained throughout the transfer. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel shall ensure that spill response resources to clean up or contain a small spill are readily available.

Airport and Rectrix / Air Cape Cod personnel are responsible for the assessment of Jet A fuel quality at the time of delivery and for the inspection of all fuel transfer and containment equipment.

8.1.2 Aviation Gas

Aviation Gas (Avgas) is currently stored in two 10,000-gallon USTs located at Griffin Avionics and at Rectrix / Air Cape Cod's Gate P Fuel Farm in a 10,000-gallon AST. Details concerning spill protection are included above in Table 1. Avgas deliveries are made by several vendors for each receiving facility and are completed during normal business hours. Flexible transfer lines, used for connecting fuel delivery trucks to the transfer manifolds, are inspected prior to each fuel transfer, and are replaced as necessary. Direct communication between the delivery truck operator and tenant personnel is maintained throughout the transfer. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

In accordance with Federal Regulations 14 CFR 139, tenant operations involving the storage or transfer of Avgas must maintain personnel training programs. One supervisor from each refueling tenant must complete an aviation fuel training course at an approved FAA-sponsored fueling course. Following this training, supervisors shall train all other employees involved in storing, dispensing and handling fuel in fire safety. Records of employee training are maintained by the Airport Operations. Records of system checks and transfer equipment inspections are maintained by each tenant.

8.1.3 Unleaded Gasoline

Unleaded gasoline is currently stored in a 10,000-gallon UST located at Hertz Car Rental located at the Barnstable Road Service Lot and at the Gate F Fuel Farm in a 4,000-gallon AST. Details concerning spill protection are included above in Table 1. Direct connections between the delivery truck and the storage tank are accomplished through flexible transfer lines, which are inspected prior to each fuel transfer. Fuel flow during transfer is controlled by the delivery truck operator and incorporates a dead man switch. Delivery of unleaded gasoline to the Gate F Fuel Farm is supervised by Airport personnel. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.1.4 Diesel Fuel

Diesel fuel is currently stored at the Gate F Fuel Farm in a 4,000-gallon AST. Details concerning spill protection are included above in Table 1. Diesel fuel at the Gate F Fuel farm is used for the refueling of Airport service vehicles. Direct connections between the delivery truck and storage tank are accomplished through a flexible transfer line, which is inspected prior to each fuel transfer. Fuel flow during transfer is controlled by the tank truck operator and incorporates a dead man switch. Delivery of diesel is supervised by Airport personnel. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2 Mobile Refueler Operations

Transfer of fuel between mobile refueling trucks and aircraft occurs regularly at the Airport and is described in further detail below. Standard procedures for the transfer of fuel to mobile refuelers operated by the Airport are included as Appendix C. Details concerning spill protection are included above in Table 2.

During normal hours of operation, tenant-operated refuelers are staged at each respective tenant's apron terminal, where aircraft refueling typically occurs. The Airport's Jet A mobile refuelers are staged along the paved access way behind the Airport Operations building on the East Ramp. Prior to fuel transfer or during extended vehicle parking, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the Mobile Refueler. Drip pans are also placed under the fuel rack and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

40 CFR 112.7(c) and 112.8(c) require all mobile or portable fuel containers to be designed, positioned, and operated within a means of containment allowing for any discharge to be contained. Rule change EPA-HQ-OPA-2005-0001; FRL-8007-2 relieves airport refuelers from the "sized" secondary containment requirements established in 40 CFR 112.8(c)(2) and (11). All refueling of aircraft occurs over impervious surfaces, allowing for any discharge to be properly contained using the spill response resources maintained on each refueler, at each fuel storage location, and in the spill response trailer at the Airport Operations building. An O/WS, described in further detail in Section 10.2, provides secondary containment for the paved apron area at the Gate F Fuel Farm. All transfers of fuel at the Gate F Fuel Farm occur over this paved apron area, including delivery and transfer to mobile refuelers.

8.2.1 Transfer of Jet A to Mobile Refuelers

The Airport and Rectrix currently operate Jet A mobile refuelers. Jet A is transferred to the Airport's mobile refuelers at the Gate F Fuel Farm, and to the Rectrix mobile refueler at the Gate P Fuel Farm. Details concerning spill protection are included above in Table 2. Airport personnel conduct daily inspections of all associated transfer equipment, including transfer hoses, flow control devices, and spill prevention devices, as required by 139 CFR 327. Annual tank testing and maintenance are completed by outside contractors. Records of daily and annual inspections are maintained by the Airport and tenant Fueling Agents. A mobile refueler daily inspection sheet utilized by Airport Operations personnel is included as Appendix D.

Loading of Jet A refuelers is accomplished through the use of flexible transfer lines. Fuel flow is controlled by a dead man switch, held by the operator. Airport and Rectrix personnel are responsible for the proper function and alignment of all fuel transfer equipment during transfer of Jet A to mobile refuelers. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2.2 Transfer of Avgas to Tenant Mobile Refuelers

Fuel transfer of Avgas to tenant mobile refuelers occurs at both Rectrix / Air Cape Cod's AST and Griffin Avionic's USTs. Details concerning spill protection are included above in Table 2. Griffin and Cape Air refuel their refuelers at the Griffin fuel transfer station. Rectrix is the only tenant that utilizes the Avgas AST located at the Gate P Fuel Farm. All fuel transfers occur over well-lit, impervious surfaces, allowing for the observation and containment of any discharges. Transfer of fuel is performed using flexible transfer lines. Fuel flow to the refueler is controlled by a dead man switch, held by the refueler operator. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2.3 Transfer of Jet A to Aircraft

Jet A Fuel is transferred to aircraft on non-movement taxiway apron areas and aircraft parking areas by Airport Operations and Rectrix mobile refuelers. Details concerning spill protection are included above in Table 2. Airport Operations personnel conduct all transfer of Jet A fuel to aircraft other than Rectrix. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2.4 Transfer of Avgas to Aircraft

Griffin, Cape Air, and Rectrix personnel transfer Avgas to aircraft on non-movement apron areas and aircraft parking areas. Details concerning spill protection are included above in Table 2. Only trained tenant personnel, as described in Sections 4.0 and 8.1.2, are authorized to dispense Avgas fuel to aircraft. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

9.0 STORAGE OF OTHER OHM

Other OHM is stored at several locations at the Airport within containers ranging in size from less than 5-gallons to 500-gallons. Details concerning 55-gallon and larger containers of other OHM (non-fueling related products) are provided in Table 3, and OHM storage locations are included on Figure 2.

Table 3. Other Airport OHM Storage Locations

Operator	Location	Product	Storage Vessel Type	Spill Protection	Volume (Gallons)
Barnstable Municipal Airport	Outside Airport ARFF/SRE Building	Waste Oil / Anti-freeze	AST	Leak detection, double walled with reinforced concrete	350/150
	Inside Airport ARFF/SRE Building	Anti-freeze	Drums	Spill Containment Pallet	55
		Diesel Exhaust Fluid			
		15W40			
		Grease			
		Hydraulic Oil			
		ATF			
		5W30 SYN			
		Waste Oil			
Rectrix / Air Cape Cod	Gate P Fuel Farm	Waste Absorbent	Drums	Spill Containment Pallet with overhead cover	55
		Waste Jet A Fuel			
		Avgas			
Rectrix Aerodrome	Inside Rectrix Hangar	Jet A	AST	Double walled	55
		Reclaimable Jet A Fuel	Drums	Spill Containment Workstation with lid	55
		Waste Oil			
		Waste Absorbent			
Griffin Avionics	Inside Griffin Hangar	Used Oil filters	Drums	Spill Containment Pallet	55
		Waste Oil			
		Avgas			
Cape Air	Inside Cape Air Hangar	Waste Oil	AST	Overflow detection, double walled	500
		Waste Oil	Drums	Spill Containment Pallet	55
		Hydraulic Oil			
		Used Oil Filters			
		Anti-freeze			
Allies Air	Inside Allies Air Hangar	Waste Oil	Drums	Spill Containment Pallet	55
AMA Nantucket Inc.	Inside AMA Nantucket Inc. Hangar	Waste Oil	Drums	Spill Containment Pallet	55
		Mineral Spirits			
Cape Flight Instruction	Inside Cape Flight Instruction Hangar	Waste Oil	Drums	Spill Containment Pallet	55
		Anti-freeze			
		Used Oil Filters			
Avis Car Wash	Barnstable Road – Service Lot	Car Washer Fluid	AST	O/WS	250
Hertz Car Wash	Barnstable Road – Service Lot	Car Washer Fluid	AST	O/WS	250

Note: The total number of drums of OHM located in tenant facilities may vary. Proper secondary containment must always be provided for all drums of OHM and petroleum storage ASTs.

9.1 OHM Usage in Portable Containers

OHM including lubricants, cleaners, car washer fluid and anti-freeze is dispensed into small containers from hand dispensers connected to larger containers. The larger containers are located within the interior of the ARFF/SRE building, tenant hangars, Hertz Car Wash, and Avis Car Wash. Any floor drains located within the buildings are connected to O/WS and discharge to the municipal sewer system. Details on spill protection is included above in Table 3.

9.2 OHM Stored in Portable Containers for Disposal

OHM including waste lubricants, cleaners, and anti-freeze is placed into 55-gallon drums for future off-site disposal. The 55-gallon drums are located within the interior of the ARFF/SRE building and tenant hangars and are located within secondary containment. Floor drains located within the buildings are connected to O/WS and discharge to the municipal sewer system. It is estimated that at any given time the Airport and tenants could have approximately 50 to 75 55-gallon drums of various OHM stored within buildings. Details on spill protection is included above in Table 3.

10.0 SPILL PREVENTION AND POTENTIAL SPILL PATHWAYS

Where experience indicates a reasonable potential for the release of oil to the environment, 40 CFR 112.7(b) requires that a SPCCP predict a flow pathway for any released material. Sanitary waste is the only material discharged to septic systems. Floor drains located within buildings are connected to O/WS and/or the municipal sewer system. Potential discharge pathways for each fuel storage and transfer area and OHM container storage area are predicted below.

10.1 Rectrix / Air Cape Cod Fuel Farm

The Rectrix/Air Cape Cod Fuel Farm is located in Drainage Area K as indicated on Figure 3. Standard operating procedures for the delivery and dispensing of Avgas from Rectrix/ Air Cape Cod Gate P Fuel Farm should limit the likelihood of a release during fuel transfer. Vehicle traffic at the AST locations and associated transfer areas is restricted. The fuel farm is equipped with an emergency shut-off. Rectrix/Air Cape Cod maintain fire-fighting spill response resources at the fuel farm as well as on-board their mobile refueler. The fuel farm is also equipped with appropriate fire extinguishers.

In the event of primary containment failure in the ASTs at the Rectrix / Air Cape Cod Gate P Fuel Farm, Avgas would be contained within the secondary containment wall, and personnel would be alerted. In the event of secondary containment failure, or a discharge during transfer to or from the AST, Avgas would be released to the

environment. Release migration would most likely occur in a northwesterly direction over the paved apron surface, toward a stormwater catch basin which ultimately discharges into Lewis Pond. Rectrix personnel have been directed to quickly install a magnetic catch basin cover and take preliminary response actions to minimize release migration.

10.2 Gate F Fuel Farm

The Gate F Fuel Farm is located in Drainage Area C as indicated on Figure 3. The Gate F Fuel Farm was improved in 2016 by removal of the USTs and installation of three new 20,000-gallon ASTs containing Jet A aviation fuel. A 4,000-gallon diesel and a 4,000-gallon unleaded gasoline AST are also located in this area. The new fuel farm improvements include secondary containment and leak detection monitoring as well as a 110% secondary containment concrete pad, a shut off valve, and a new O/WS that connects to the existing storm drain system in the vicinity of the three 20,000-gallon ASTs.

The 4,000-gallon diesel AST and 4,000-gallon unleaded gasoline AST are located adjacent to the secondary containment pad associated with the 20,000-gallon ASTs. Both tanks are located within secondary containment and have overfill prevention devices. Fixed fuel transfer lines are wrapped in secondary containment fiberglass housings. The paved vehicle staging area adjacent to the ASTs features an O/WS and oil level alarm. The transfer area is well-lit to aid in the observation of a release. Additional details concerning spill protection are included above in Table 1.

In the event of a release of Jet A fuel during fuel transfer, release migration would occur over the concrete containment pad and into a concrete sump. The sump features petroleum detection technology which includes audible and visual alarms to signal the presence of oil in the structure. A discharge of fuel to the paved surface at the Gate F Fuel Farm will collect in an O/WS and can be removed by a cleanup contractor for proper disposal.

In the event of failure of the unleaded gasoline/diesel AST or pump station, released fuel would migrate over paved surfaces into an O/WS. The O/WS features a high oil level audible and visual alarms to signal the presence of petroleum within the structure. A discharge of fuel to the paved surface at the Gate F Fuel Farm will collect in the O/WS and can be removed by a cleanup contractor for proper disposal.

ARFF/OPS personnel conduct FAA required testing of the fuel from the Gate F Jet A ASTs and the Airport's mobile refuelers on a daily basis, generating approximately 5 gallons of sample fuel per day. Sample fuel is returned to the tank via a recycling system located within the fuel farm.

10.3 Barnstable Municipal Airport – Airport ARFF/SRE Building

The ARFF/SRE Building is located in Drainage Area M. A double walled split AST is located outside, adjacent to the Airport ARFF/SRE Building. The AST contains 350-gallons of waste oil and 150-gallons of anti-freeze. The AST includes a primary steel tank and secondary containment with reinforced concrete and leak detection.

In the event of primary containment failure in the AST, waste oil and/or anti-freeze would be contained within the secondary containment wall, and personnel would be alerted. In the event of secondary containment failure, or a discharge during transfer to or from the AST, waste oil and/or anti-freeze would be released to the environment. Release migration would most likely occur in an eastern direction over the paved apron surface, toward a grass area with a with a leaching catch basin with an underground discharge chamber. ARFF/OPS personnel have been directed to quickly install a magnetic catch basin cover and take preliminary response actions to minimize release migration.

10.4 Barnstable Municipal Airport - Emergency Generators

All emergency generators at the Airport have been converted to natural gas.

10.5 Griffin Avionics

Griffin Avionics is located within Drainage Area F. Standard operating procedures for the delivery and dispensing of Avgas from the Griffin Avionics USTs should prevent a release during fuel transfer. Additionally, overfill prevention in each tank's transfer manifold prevents the transfer of Avgas above the tank's capacity. Griffin maintains fire extinguishers and spill response resources at the fuel transfer station as well as on-board their mobile fuel trucks.

In the event of a release during fuel delivery, or fuel transfer to mobile refuelers, fuel released to the paved surface would migrate toward and could potentially enter leaching catch basins and/or the Airport's stormwater system which ultimately discharges to Upper Gate Pond. In the event of primary containment failure in the Griffin USTs, Avgas would be released to the soils and fill material around and below the UST.

10.6 Refueling of Aircraft

Standard operating procedures for aircraft refueling reduce the potential for a discharge. Refueling of aircraft occurs on taxiway apron areas on both the North and East Ramps. There are no spill prevention systems associated with the refueling of aircraft. A release during refueling would result in a release to the paved apron surface, where the discharge could be contained using available spill response resources. Airport and tenant mobile refuelers are required to be equipped with spill response kits as described in Table 2, above. Additionally, impacts to the Airport's stormwater drainage system are minimized by the placement of magnetic mats over storm drain inlets prior to refueling operations.

10.7 Hertz Car Wash

Unleaded gasoline is stored and transferred at the Hertz Car Wash, located directly across Barnstable Road from the Airport. In the event of primary containment failure in the Hertz UST, released fuel would be contained within the secondary containment wall. In the event of secondary containment failure, fuel would be released to the soils and fill material around and under the UST.

In the event of a release during fuel transfer at the Hertz service station, spilled fuel could potentially migrate over paved surfaces and enter infiltrating catch basins located in the service station lots.

11.0 EMERGENCY RESPONSE ACTION PLAN

An Emergency Response Action Plan (ERAP) is intended to provide easy access to instructions for Airport Response Team personnel in the event of a release. An ERAP will remain attached as a preface to this SPCCP and be distributed to Response Team members at the discretion of the Program Manager. The ERAP will be kept on file and updated as described in Section 3.0 of this SPCCP.

The ERAP shall contain the following information, and shall be constructed to facilitate and expedite response to a release of threat of release of OHM:

1. Facility name, address, and general location;
2. 24-hour contact information for each Response Team Member;
3. 24-hour contact information for the Spill Response Program Manager and Coordinator;
4. Local, State, and Federal Emergency Response contact information;
5. Recommended guidelines for spill abatement, response, etc.;
6. Location of spill response materials/equipment;

7. A site map that includes the following (Figure 2 and 3):
    a. floor-drain, manhole, sewer grate locations, etc.
    b. location of oil and hazardous materials bulk storage areas
8. Additional Response Resources Contact Information (e.g., LSP, outside spill cleanup contractor); and
9. Forms to aid in proper documentation and reporting of a release.

A copy of the ERP is included as Preface I.

12.0 SPILL RESPONSE PROCEDURES

In the event of a release, or threat of release of OHM to the environment, personnel shall implement response actions to contain the release. The Spill Response Coordinator or Program Manager shall be notified as soon as possible. The following response actions should be followed for most releases.

Note: Any personnel undertaking any response activity is responsible for ensuring that appropriate, properly fitted, personnel protective equipment (PPE) is worn at all times.

12.1 General Response Procedures for Airport and Tenant Employees

Note: Only properly trained Airport and Tenant employees shall respond to a release of oil or hazardous materials.

1. Initiate evacuation, if necessary;
2. Notify Spill Response Coordinator or Program Manager, listed in Section 2.0;
3. Stop spill flow when possible without risk of personal injury to self or others;
4. Immediately deploy any readily available response resources (e.g., absorbent pads, drain covers, granulated absorbent, etc.);
5. Make the release area off limits to unauthorized personnel;
6. Restrict all sources of ignition when flammable substances are involved;
7. Continue response actions at the direction of the Spill Response Coordinator or Program Manager; and
8. Ensure that all contaminated response resources and PPE are properly containerized and labeled for disposal by a licensed hazardous waste handler.

The sequence of the initial response action may be altered depending upon the spill characteristics (i.e., type of material, quantity). The following section describes Spill Response Coordinator and Program Manager responsibilities during response actions.

12.1.1 Spill Response Coordinator

Note: If the Program Manager is unavailable, the Coordinator is authorized to activate emergency response contractors, and initiate any regulatory reporting procedures.

1. Evacuate any non-essential personnel, if necessary;
2. Eliminate the source of the release, if not already accomplished, without jeopardizing the health and safety of self or others;
3. Report the release to the appropriate local contacts (Airport Fire Department, Hyannis Fire Department, Emergency Response Contractors, LSP). When notifying any outside agency of a release of oil or hazardous material the following information, at minimum, should be provided:
    a. Name of individual reporting spill;
    b. Release location and Contact information;
    c. Substance released, estimated amount;
    d. Date and Time of release;
    e. Description of response actions, undertaken and planned;
    f. Other agencies notified or to be notified; and,
    g. Any other relevant information.
4. Direct the deployment of response resources and ensure their proper use;
5. Minimize the potential for environmental impact;
6. Notify LSP and emergency response contractors (Section 13.1) if necessary;
7. Notify the Program Manager and inform them of the release. Determine if release requires MassDEP or Federal notification, as described in Section 13.0;
8. Ensure that all contaminated response resources and PPE are properly containerized and labeled for disposal in accordance with applicable local, state and federal regulations by a licensed hazardous waste handler; and
9. Properly document all response activities; including generator information, response personnel, emergency contractor information, and any related correspondence.

12.1.2 Spill Response Program Manager

1. Determine if the release requires notification, as described in Section 13.0;

2. Ensure proper notification of authorities and/or outside response contractors (Sections 13.0 and 13.1);
3. Ensure proper documentation of release and response activities; a Spill Reporting Form is included as Appendix E;
4. Retain Hazardous Waste Manifests or Bills of Lading from licensed hazardous waste handlers; and,
5. Take additional measures, as necessary, to minimize potential for subsequent environmental impact (e.g., install absorbent boom at stormwater outfalls to capture stormwater-transported contaminants).

13.0 NOTIFICATION REQUIREMENTS

In response to a release of oil or hazardous materials, responsible parties are required to conduct response activities in accordance with Massachusetts General Laws, Chapter 21E, 40 CFR 112, and the Massachusetts Contingency Plan (310 CMR 40.0000). Notification of Local, State, or Federal agencies may be necessary. All releases, regardless of size or material, shall be reported to the Spill Response Coordinator or Program Manager. Similarly, any release that occurs due to tenant operations on Airport property must be reported to the Spill Response Coordinator or Program Manager.

The Spill Response Coordinator or Program Manager shall establish whether a harmful quantity has been released, and if the release requires notification of outside agencies. Federal regulations generally define an oil spill of harmful quantity as "….such quantities of oil determined to be harmful to the public health or welfare…..to include discharges which exceed applicable water quality standards…….or cause a film or sheen on the surface of the water, or cause a sludge or emulsion to be deposited beneath the water surface". These regulations are applicable to all navigable waters of the United States, Upper Gate and Lewis ponds are both considered navigable waters.

Massachusetts regulations 310 CMR 40.0000 define a release of 10 gallons or greater of oil or gasoline as a reportable quantity and notification to the MassDEP is required within two hours of obtaining knowledge of the release. Contaminants detected in the environment at or above threshold concentrations also require reporting to the MassDEP and are listed in 310 CMR 40.1600. Additionally, a release of oil or hazardous materials to a stormwater conveyance (e.g., leaching catch basins, culverts) requires MassDEP notification, regardless of the volume of OHM.

In the event of a single discharge of more than 1,000 gallons into or upon the navigable waters of the U.S. or adjoining shorelines, or two discharges greater than 42 gallons

within any 12 month period, the SPCCP shall be submitted to the EPA Region 1 Regional Administrator and the MassDEP for review.

13.1 Reporting to State and Federal Agencies

In accordance with Massachusetts Regulations 310 CMR 30.0000 and 310 CMR 40.0000, certain releases or threats of releases of a reportable quantity of oil and or hazardous materials must be reported to the MassDEP within two hours (www.state.ma.gov/dep). Federal reportable quantities for releases into soil, water and air are listed in Table 302.4 of 40 CFR 302.4. Each regulatory agency has these reportable quantities posted on its website.

If a harmful or reportable quantity, as defined by state and/or federal regulations, has been discharged, the spill should be reported to the following agencies:

National Response Center
24 Hour: 800-424-8802

Massachusetts Department of Environmental Protection Emergency Response Center
24-Hour Call Center: 888-304-1133

Massachusetts State Police / Hyannis Fire Department
911

Airport Rescue and Firefighting
508-778-7770

Barnstable Fire District Water Department

(To report a spill on Water Dept. property located north of 15/33)
Office: 508-362-6498

Supt. Thomas Rooney (24-Hour): 508-364-9359

The following information must be provided to State and Federal agencies when a spill is reported. All correspondence with Local, State, or Federal agencies should be recorded on a Spill Reporting Form, included as Appendix E.

1. Name, location and type of facility;
2. Person in charge of facility and phone number;
3. Name and phone number of person reporting;
4. Type and estimated amount of material;

5. Location of spill;
6. Time and date of incident;
7. Impacted waterways;
8. Whether or not storm drains have been impacted;
9. Cause of incident and equipment involved;
10. Injuries and/or property damage;
11. Duration of discharge;
12. Response Actions taken; and,
13. Agencies notified.

In the event of a large or complex release of oil or hazardous materials, the Airport will rely upon outside cleanup contractors to conduct cleanup activities. Spill containment and cleanup contractors and regulatory consultants are listed below.

Spill Containment and Cleanup:

Clean Harbors	800-645-8256
Moran Environmental Recovery	888-233-5338
Global Remediation	508-828-1005

Licensed Site Professional:

Horsley Witten Group, Inc.	508-833-6600
Bryan Massa, LSP 24-Hour Contact Number:	781-243-1527
Mark Nelson, LSP 24-Hour Contact Number:	508-566-0912

14.0 SPILL RESPONSE RESOURCES

A rapid spill response trailer is maintained at the ARFF/SRE Building. A complete inventory of the trailer's contents is included as Appendix F. Inventories are conducted regularly, and out-of-date equipment is replaced. A smaller spill kit is also maintained on each of the Airport's Mobile Refuelers, at the Gate F Fuel Farm, and at the Airport ARFF/SRE Building waste oil and anti-freeze storage AST. Each tenant involved in the

storage or transfer of fuel is responsible for maintaining their own spill response resources on each of their vehicles and at fuel storage locations.

15.0 INSPECTIONS

The Airport conducts regular inspections of all OHM storage areas including fuel storage tanks, mobile refuelers, waste storage area, and drum storage areas. Inspections are conducted by properly trained Airport personnel and are recorded on inspection sheets. Inspection sheets are kept on file at the Airport Operations office for a minimum of three years, as required by 40 CFR 112.7. Mobile refueler and Gate F Fuel Farm inspection sheets are included as Appendix D and G.

15.1 Daily Inspections

On a daily basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. General Condition;
2. Filter Sumps;
3. Filter differential pressure;
4. Deadman control operation;
5. Brake Interlocks;
6. Nozzle fueling pressure
7. Hoses, Swivels and Nozzles;
8. Ground reels, cables, and clamps;
9. Fire extinguishers
10. Tanker troughs;
11. Tanker sumps;
12. Condensation in air tanks;
13. Ladders
14. Mechanics tools; and
15. Diesel fuel level.

The Gate F Fuel Farm is inspected for:

1. Tank sumps;

2. Fuel sumps;
3. Filter sumps;
4. Hoses, swivels, and nozzles;
5. Ground reels, cables, and clamps;
6. Fire extinguishers;
7. Waste fuel tanks;
8. Differential pressure; and
9. Primary pressure.

Hand Pump Operation

- Prior to hand pump usage by Airport staff, verify that the stormwater drain valve located adjacent to the secondary containment structure is in the closed position.
- Operate hand pump as necessary to obtain fuel sample.
- After sample collection, verify hand pump is in the closed position.

Stormwater Drain Valve

- Following a rain event, Inspect the concrete secondary containment pad and both interior drainage sumps for visual and olfactory evidence of OHM. Collect a representative sample of accumulated rainwater in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the secondary containment is assumed to be free of OHM.
- Next, open the first manhole cover (marked "DRAIN") in front of the Gate F Fuel Farm located between the storm water valve and the fuel farm. Cones or other means to mark the open hole must be utilized. Collect a representative sample of accumulated rainwater from within the manhole in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the drain manhole is assumed to be free of OHM. The adjacent drain valve should then be opened, and the Airport staff member will monitor the draining of the open manhole and secondary containment as the water moves into the adjacent O/WS prior to discharging into the stormwater system.
- Once the draining of the open manhole and secondary containment is completed, the drain valve is to be closed. Additionally, the manhole is to be closed.

15.2 Monthly Inspections

On a monthly basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. Filtration test;
2. Grounding cable continuity test;
3. Nozzle screens;
4. Signs and placards;
5. Meter seals;
6. Emergency shutdown system;
7. Tanker interiors;
8. Tanker vents and dome covers;
9. Tanker trough drains; and
10. Fire extinguishers.

The Gate F Fuel Farm is inspected for:

1. Grounding cable continuity;
2. Nozzle screens;
3. Signs and placards;
4. Floating suctions; and
5. Fire extinguishers.

15.3 Quarterly Inspections

On a quarterly basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. General condition;
2. Pressure controls;
3. Secondary pressure; and,
4. Water defense system.
5. The Gate F Fuel Farm is inspected for:

6. Tank high level controls;
7. Emergency shutdown system; and
8. Water defense system.

15.4 Annual Inspections

On a quarterly basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. Filter elements;
2. Pressure gauges; and
3. Fuel meters.

The Gate F Fuel Farm is inspected for:

1. Interior tank condition;
2. Pressure gauges;
3. Filter elements;
4. Line strainers;
5. Filter/separator heaters;
6. Tank vents;
7. Tank high level controls; and
8. Facility condition.

15.5 Additional Inspection and Maintenance

Annual cleaning and testing of fuel storage tanks are conducted by outside contractors. Tanks are inspected for wall thickness, corrosion, and tank integrity.

40 CFR 112.7(i) mandates; “If a field-constructed above ground container undergoes a repair, alteration, reconstruction, or a change in service that might affect the risk of a discharge or failure due to brittle fracture or other catastrophe, or has discharged oil or failed due to brittle fracture failure or other catastrophe, (the Airport) must evaluate the container for risk of discharge due to brittle fracture or other catastrophe, and as necessary, take appropriate action.”

15.6 PROACTIVE MEASURES AND RECOMMENDATIONS FOR SPILL PREVENTION AND SAFETY

To comply with the Local, State and Federal regulations cited in this Plan, the Airport and its Tenants will continue to incorporate spill prevention and safety measures into daily operations. Refer to Appendix H for examples of the spill response and safety equipment referenced below, and for a list of equipment vendors. The following are general recommendations:

- Storage locations for oil and/or hazardous materials will be indoors or otherwise protected from the environment, and, when feasible, within secondary containment capable of holding 110% of the volume of the largest container or tank.
- All flammables should be kept in a suitable storage locker or facility.
- Each facility should be equipped with enough spill response resources to respond to likely releases from aircraft maintenance, refueling, and fuel transfer.
- Each of the Airport operated mobile refuelers, as well as each fuel transfer depot, should be outfitted with magnetic catch basin covers, Speedi-dry™, a "pop-up pool" to contain a release of up to 65 gallons, and other approved response equipment.
- Quantities of hazardous materials should be kept to a minimum. Only frequently used hazardous materials should be kept in storage. Expired, obsolete, or otherwise unused hazardous materials should be disposed of properly.
- Empty drums and containers should be properly disposed of and not allowed to accumulate in bulk.
- Refueling and fuel transfer should only occur in areas that are covered by an impervious layer of asphalt or concrete.
- Waste oil storage by the Airport and its Tenants shall comply with Federal, State, and local regulations related to waste accumulation volume and time limits. Waste oil drums shall be clearly labeled, and all manifests kept on file for three years.

Indoor liquid hazardous materials should be stored in a location such that a spill from the largest container or tank will be contained or absorbed. All hazardous materials should be stored in flame retardant storage lockers and transferred to proper dispensing containers prior to use.

- Compressed gases should be stored in locations protected from vehicles traffic, including forklifts, by protective bollards or concrete walls or dikes.

- General waste should be separated from hazardous waste prior to disposal. Hazardous waste, including hazardous waste containers, should not be disposed of in general waste dumpsters.
- Safety Data Sheets (SDS) shall be posted in an area that is obvious to all employees in the case of an emergency (i.e. in area of use). SDSs shall be updated regularly. Emergency eyewash and shower stations shall be located in areas where oil and/or hazardous materials are used.
- Aircraft de-icing should only be performed in the designated area.
- Delivery of fuel from transport vehicles to storage tanks shall be supervised by a properly trained employee or supervisor.
- Transfer of fuel to mobile refuelers or aircraft shall only by conducted by properly trained employees.
- Whenever possible, biodegradable materials should be substituted for hazardous materials.

16.0 REFERENCES

Epsilon Associates, Inc. November 2004. Spill Pollution Control and Countermeasures Plan for Nantucket Memorial Airport, Nantucket, Massachusetts.

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Horsley Witten Group, Inc. July 2003 (Revised). Spill Prevention Control and Countermeasures Plan, Barnstable Municipal Airport.

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Massachusetts Board of Fire Prevention Regulations. June 16, 2003. Massachusetts Comprehensive Fire Safety Code, Tanks and Containers, 527 CMR 9.00.

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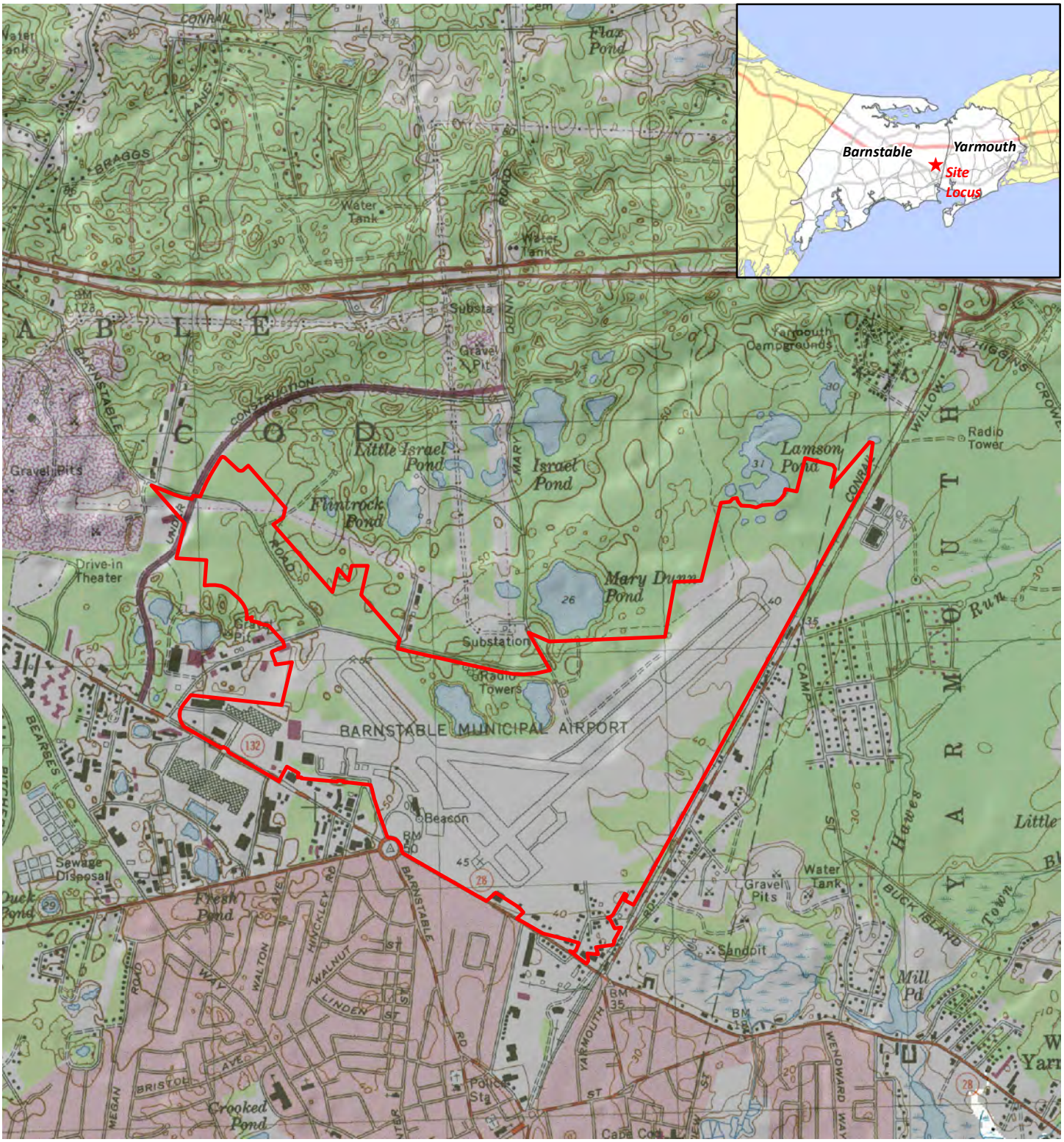
U.S. Environmental Protection Agency, Oil Program. See their homepage at www.epa.gov/oilspill/

FIGURES

Figure 1 – USGS Locus
Figure 2 – Oil and Hazardous Materials Storage Map
Figure 3 – Site Plan



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*2016 NAIP imagery service

Legend

Barnstable Municipal Airport Property Boundary

N

0 2,000

1" = 2,000 feet

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

USGS Locus
Barnstable Municipal Airport
Hyannis, MA

Date: 11/18/2019 Figure 1

*Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Israel Pond
Flint Rock Pond
Lamson Pond
Mary Dunn Pond
Upper Gate Pond
Lewis Pond

THORNTON DRIVE
INDEPENDENCE DRIVE
BREEDS HILL ROAD
KIDDS HILL ROAD
SOUTH FLINT ROCK ROAD
MARY DUNN ROAD
WILLOW STREET
ATTUCKS LANE
AIRPORT ROAD
JEFFERSON AVENUE
COOLIDGE ROAD
GRANT ROAD
ADAMS ROAD
WASHINGTON AVENUE
BUCHANAN ROAD
LINCOLN AVENUE
CAMP STREET
YARMOUTH ROAD
ROSARY LANE
BUCK ISLAND ROAD
MARY DUNN WAY
MAHER ROAD
ENGINE HOUSE ROAD
CORPORATION STREET
WAREHOUSE ROAD
HYANNIS VILLAGE
HIRAM AVENUE
ALICIA ROAD
BEARSES WAY
QUAKER ROAD
WALTON AVENUE
COMPASS CIRCLE
HINCKLEY ROAD
SPRUCE STREET

Cape Air
-500-gal. AST of waste oil
-100-gal. AST of Avgas
-55-gal. drums of waste oil
-55-gal. drum of hydraulic oil
-55-gal. drums used oil filters
-55-gal. drums of anti-freeze

Rectrix Aerodrome
-55-gal. AST of Jet A Fuel
-55-gal. drum of Reclaimable Jet A Fuel
-55-gal. drums of waste oil
-55-gal. drum of waste absorbent
-12/19 Spill of 1-2 gal. of Jet Fuel

Griffin Avionics
-55-gal. drums of waste oil
-55-gal. drum of avgas
-55-gal. drum used oil filters

Gate F Fuel Farm
- Three 20,000-gal. ASTs of Jet A fuel
- One 4,000-gal. AST of gasoline
- One 4,000-gal. AST of diesel
- 11/2019 Spill of 51-gal. of Jet A fuel

Griffin Fuel Island
- Two 10,000-gal. USTs of Avgas 100 LL Fuel

Allies Air
-55-gal. drums of waste oil

AMA Nantucket Inc.
-55-gal. drums of waste oil
-55-gal. drum of mineral spirits

Cape Flight Instruction
-55-gal. drums of waste oil
-55-gal. drums of anti-freeze
-55-gal. drum of used oil filters

Hertz
-10,000-gal. UST of gasoline-
-250-gal. container of car washer fluid (deicer)

Avis
-250-gal. container of car washer fluid (deicer)

Rectrix/Air Cape Cod Gate P Fuel Farm
- One 10,000-gal. AST of Jet A fuel
- One 10,000-gal. AST of Avgas 100 LL fuel
-55-gal. drum of Waste Jet A Fuel
-55-gal. drum of Avgas
-55-gal.drum waste absorbent

ARFF/SRE Building
-150-gal. anti-freeze and 350-gal. waste oil split double walled AST (outside)
-55-gal. drums of anti-freeze
-55-gal. drums of waste oil, hydraulic oil, grease, and other oils

Legend

Barnstable Municipal Airport Property Boundary

Mobile Refueler Parking Areas

Note:
AST = Above ground storage tank
UST = Underground Storage Tank
Avgas = Aviation Gas
LL = Low Lead
ARFF/SRE = Aircraft Rescue and Fire Fighting/Snow Removal Equipment

N

0 800

1" = 800 feet

Property = 645 acres

Horsley Witten Group
Sustainable Environmental Solutions
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Oil and Hazardous Materials (OHM) Storage Map and Spill Locations Barnstable Municipal Airport Hyannis, MA

Date: 1/10/2020

Figure 2

**Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services*

**2016 NAIP imagery service*

Document Path: H:\Projects\HYA\14105 BMA On-Call Eng Services\GIS\Maps\191230_SPCCP OHM Storage Map.mxd

last modified: 01/16/20 printed: 01/16/20 by ln H:\Projects\HYA\14105 BMA On-Call Eng Services\SWPPP\Drawings\Current Drainage Plan\151229 - Drainage Plan.dwg

DRAINAGE AREA A

DRAINAGE AREA E

DRAINAGE AREA F

DRAINAGE AREA G

DRAINAGE AREA O

DRAINAGE AREA N

DRAINAGE AREA C

DRAINAGE AREA B

DRAINAGE AREA D

DRAINAGE AREA M

DRAINAGE AREA H

DRAINAGE AREA I

DRAINAGE AREA J

DRAINAGE AREA K

DRAINAGE AREA L

VORTECHS WATER QUALITY UNIT

VORTECHS WATER QUALITY UNITS

INFILTRATION BASIN

UNDERGROUND RECHARGE STRUCTURES

D/WS AND PUMP STATION

DISCHARGE CONTROL VALVES

MARY DUNN POND

UPPER GATE POND

LEWIS POND

RUNWAY 15/33 (5252' X 150')

RUNWAY 6/24 (5425' X 150')

TAXIWAY A

TAXIWAY B

TAXIWAY C

TAXIWAY D

MAIN TERMINAL APRON

EAST RAMP APRON

SOUTH RAMP

LEGEND

RW1533-29 CB: Catchbasin
RW1533-29 LCB: Leaching Catchbasin
RW1533-29 LCB/RD: Leaching Catchbasin / Roof Drain
RW1533-29 LCB/UGDC: Leaching Catchbasin with Underground Discharge Chamber
RW1533-29 LB: Leaching Basin with No Catchment
O/WS: Oil Water Separator
Airport Property Line
BIO: Bioretention Basin
T31 VORTECH: CONTECH Water Quality Structure

NOTE:

All locations of buildings, utilities, and surface features derived from Town of Barnstable, Massachusetts, Geographic Information System. Location and nature of stormwater utilities based upon data provided by Edwards and Kelcey Barnstable Municipal Airport Drainage Plan (07/07), and field inspection of select utilities by Horsley Witten on July 15, 2008.

AIRPORT BUILDINGS/AREAS TABLE

NO.	BUILDING
1	RECTRIX AERODOME CENTER HANGAR
2	CAPE AIR/NANTUCKET AIR HANGAR
3	GRIFFIN AVIONICS
4	GRIFFIN AVIONICS FUEL STATION
5	SPECIALIZED AUTOMOTIVE
6	HANGAR 2 – CAPE AIR / AIRPORT MAINTENANCE
7	GATE F FUEL FARM
8	HANGAR BUILDING (VACANT)
9	ALLIES AIR
10	MAIN TERMINAL BUILDING
11	MAIN TERMINAL GENERATOR
12	AIR TRAFFIC CONTROL TOWER (ATCT)
13	SOUTH RAMP DEICING PAD
14	AIRPORT ARFF/SRE FACILITY
15	RECTRIX/AIR CAPE COD
16	RECTRIX/AIR CAPE COD FUEL FARM
17	AIRPORT LIGHTING VAULT
18	BMA T-HANGAR
19	AMA NANTUCKET INC.
20	CAPEFLIGHT INSTRUCTION
21	HYANNIS HANGAR LLC
22	HEXAGON HANGAR
23	KINGSBURY AVIATION (BUILDING 1)
24	KINGSBURY AVIATION (BUILDING 2)
25	STEAMSHIP AUTH. PARKING LOT
26	HERTZ CAR WASH
27	AVIS CAR WASH
28	BUDGET TRUCK RENTAL

GRAPHIC SCALE

250 0 125 250 500 1000

(IN FEET)

Horsley Witten Group
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508-833-3150 fax

Date: 12/31/2019 | Designed By: GWTH | Drawn By: GWTH | Checked By: JEL

Plan Title:

SITE PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

Prepared For:
Barnstable Municipal Airport
480 Barnstable Road
Hyannis, MA 02601
(508) 775-2020

Revisions

1	12-27-11	ERK	JEL Update to Drainage Plan
2	4-13-12	GH	JEL Update to Drainage Plan
3	4-27-12	GH	JEL Update to Drainage Plan
4	1-25-13	GH	JEL Update to Drainage Plan
5	7-29-13	GH	JEL SWPPP Figure 3
6	9-30-15	GH	JEL SWPPP Figure 3
7	12-29-15	GH	JEL SWPPP Figure 3
8	12-31-19	LEN	PAC Update to Drainage Plan

Project Number: 14105

Figure: 3

APPENDIX A

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

Federal Regulation 40 CFR 112.20, Appendix C, requires a facility to certify whether or not it is considered to pose a substantial harm. A determination of substantial harm status is based on the criteria below.

Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

The facility does not transfer oil over water. The facility does have a total oil storage capacity greater than or equal to 42,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?

No, the facility does not have a total oil storage capacity greater than or equal to 1,000,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR 112, or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to 40 CFR 112, section 13, for availability) and the applicable Area Contingency Plan.

No, the facility does not have a total storage capacity greater than or equal to 1,000,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR 112, or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake.

No, the facility does not have a total storage capacity greater than or equal to 1,000,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and has the facility experienced a reportable spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

No, the facility does not have a total storage capacity greater than or equal to 1,000,000 gallons.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature: _____

Name:_____

Title:_____

Date:_____

APPENDIX B

RAINWATER INSPECTION FORM

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

RAINWATER INSPECTION FORM

After rain events, the Barnstable Municipal Airport is required to inspect the secondary containment structure at the Gate F Fuel Farm to ensure that retained rainwater will not cause a discharge as described in 40 CFR§ 112.1(b) upon release. As required by 40 CFR§ 112.8(c)(3)(iii), the Airport must keep adequate records of these inspections and events where drainage of uncontaminated rainwater from secondary containment occurs.

Following a rain event, an Airport staff member will perform an inspection of any standing water within the concrete secondary containment structure and both interior sumps. The inspection will include the collection of a representative rainwater sample in a clear container for visual and olfactory analysis for indications of oil and/or hazardous materials (OHM).

If no visual or olfactory evidence of OHM is observed within the sample, the Airport staff member will record the observations on the inspection form and will proceed with discharging accumulated rainwater from the concrete secondary containment structure and interior sumps. The Airport staff member must observe the entire drainage of accumulated rainwater. While draining is occurring, the Gate F Fuel Farm must not be utilized for fuel sample collection and/or fuel transfers. Upon completion, the Airport staff member **must** close the drain valve. Under no circumstance is the drain valve allowed to remain open after the rainwater discharge. Details for completing the accumulated rainwater discharge is set forth below.

- Complete a full walk around the Gate F Fuel Farm to inspect for any visual signs of a potential leak from the ASTs and confirm that the alarm monitoring system is operating properly. Inspect the concrete secondary containment pad and both interior drainage sumps for visual and olfactory evidence of OHM. Collect a representative sample of accumulated rainwater in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the secondary containment is assumed to be free of OHM.
- The drain valve should then be opened, and the Airport staff member will monitor the draining of the secondary containment as the water moves into the adjacent O/WS prior to discharging into the stormwater system.
- Once the draining of the secondary containment is completed, the drain valve is to be closed.

RAINWATER INSPECTION FORM

PERSONNEL COMPLETING INSPECTION:

INSPECTION PERSONNEL:	ORGANIZATION / TITLE:

INSPECTION DATE: _____ INSPECTION TIME: _____

CONFIRM INSPECTION COMPLETED FOR ACTIVE LEAKS / SIGNS OF POTENTIAL LEAKS.

FULL WALK AROUND OF FUEL FARM: _____
ALL SENSORS IN NORMAL ("GREEN") MODE: _____

VISUAL AND OLFACTORY ASSESSMENT OF RAINWATER IN SECONDARY CONTAINMENT STRUCTURES SHOULD BE RECORDED ON THIS RAINWATER INSPECTION REPORTING FORM. ALL RECORDS ARE TO BE MAINTAINED AT THE AIRPORT MANAGER'S OFFICE.

ASSESSMENT SUMMARY:

_____
_____
_____
_____
_____
_____
_____
_____

LOCATION	TIME:	COLOR:	ODOR:	CLARITY:	FLOATING SOLIDS:	SETTLED SOLIDS:	SUSPENDED SOLIDS:	FOAM:	OIL SHEEN:	OTHER INDICATORS
Secondary Containment Concrete Pad										
Interior Sumps										

TIME VALVE OPENED: _____ TIME VALVE CLOSED: _____

RAINWATER INSPECTION FORM IS TO BE STORED IN THE AIRPORT MANAGER'S OFFICE

APPENDIX C

FUEL DELIVERY AND TRANSFER PROCEDURES

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

FUEL DELIVERY AND TRANSFER PROCEDURES

The following general procedures should be followed during fuel delivery, transfer of fuel, and refueling of aircraft. Refer to the Airport's Fuel Fire Safety Training manual for additional descriptions of fuel transfer procedures.

Vendor Delivery of Fuel

1. The vendor driver shall coordinate delivery time with the appropriate Tenant supervisor and/or HYA personnel.
2. All paperwork associated with the order should be inspected prior to transfer to ensure delivery of proper fuel quantity and type.
3. Appropriately trained tenant and/or HYA personnel shall be present throughout entire fuel transfer.
4. Tenant and/or HYA personnel shall identify the appropriate storage tank for delivery, and identify/inspect all mechanisms or piping associated with the fuel transfer.
5. Tenant and Airport storage tanks should be inspected for capacity prior to fuel transfer.
6. All vehicles in the fuel transfer area shall be turned off, and sources of ignition eliminated.
7. A sample of the vendor fuel, for delivery, should be obtained in a suitable container. The sampled fuel should be inspected for color and odor. Results should be recorded and compared against original order.
8. The delivery vehicle should be parked within the designated fuel delivery area as directed by Airport personnel. Wheels should be chocked to prevent vehicle movement during transfer. Magnetic storm drain covers shall be placed on all catch basins within proximity of the delivery vehicle prior to fuel transfer.
9. A drip pan shall be placed under the fuel rack on the vendor fuel delivery truck.
10. During fuel transfer, at least one attendant shall be present at all times. There shall be no use of automated pumping systems.
11. The delivery vehicle shall be properly grounded and bonded, in accordance with the Airport's Fuel Fire Safety Training Manual.
12. The truck operator shall be responsible for making all connections between the truck and any piping involved in the fuel transfer. Both the operator and tenant or HYA personnel shall inspect transfer piping, prior to fuel transfer.

13. Spill response resources should be readily available, for cleanup or containment of small spills. The tenant or HYA personnel shall be responsible for the proper management of small spills.
14. The truck operator and tenant or HYA personnel shall be aware of all safety and fuel flow control devices, such as pump shut-off and “dead-man” switches.
15. Once fuel transfer has begun, the tenant or HYA personnel shall inspect all fittings, couplings, hoses, and associated transfer materials, for evidence of leaking.
16. In the event of a release, or threat of release, due to a failure in any of the fuel transfer equipment, fuel flow shall cease immediately, and appropriate response actions shall be taken to clean up the release.
17. Fuel transfer shall not occur unless all transfer equipment is being used as intended and approved.
18. Upon completion of fuel transfer, the truck operator shall ensure that all transfer lines are cleared of their contents before disconnect, so as to avoid any releases during disconnect.
19. Tenant or HYA personnel shall be responsible for the proper stowing of all facility transfer lines.
20. Any sample material, or absorbent materials used to clean up a small release shall be properly disposed of by a licensed disposal company. Proper paperwork shall be kept on file, and the Spill Response Coordinator or Program Manager notified.

Transfer of Fuel to Mobile Refuelers

1. Transfer of fuel to mobile refuelers shall be done by appropriately trained tenant and HYA personnel (the operator), only.
2. All fuel flow control devices, such as “dead-man” switches, shall be inspected for proper operation prior to fuel transfer.
3. All vehicles in the fuel transfer area shall be turned off, and sources of ignition eliminated.
4. The Mobile Refueler should be parked within the designated fuel delivery area as directed by Airport personnel. Wheels should be chocked to prevent vehicle movement during transfer. Magnetic storm drain covers shall be placed on all catch basins within proximity of the vehicle prior to fuel transfer.
5. A drip pan shall be placed under the fuel rack on the vehicle.
6. The operator shall ensure that spill response resources to clean up or contain a small spill are readily available.

7. The mobile refueler shall be properly grounded and bonded, in accordance with the Airport's Fuel Fire Safety Training Manual.
8. Fuel transfer equipment, including hose material and couplings, should of an appropriate material, and shall be inspected by the operator prior to use.
9. Transfer lines should implement dry-disconnect fittings and couplings that prevent the flow of fuel until properly connected to a mated coupling.
10. The operator shall be aware of all safety and fuel flow control devices, such as pump shut-off and "dead-man" switches.
11. The operator shall gauge mobile refueler tank capacity prior to fuel transfer, and monitor tank level during transfer.
12. Once fuel transfer has begun, the operator shall inspect all fittings, couplings, hoses, and associated transfer materials, for evidence of leaking.
13. During fuel transfer, at least one attendant shall be present at all times. There shall be no use of automated pumping systems.
14. In the event of a release, or threat of release, due to a failure in any of the fuel transfer equipment, fuel flow shall cease immediately, and appropriate response actions shall be taken to cleanup the release.
15. Fuel transfer shall not occur unless all transfer equipment is being used as intended and approved.
16. Upon completion of fuel transfer, the operator shall ensure that all transfer lines are cleared of their contents before disconnect, so as to avoid any releases during disconnect.
17. The Operator shall be responsible for the proper stowing of all facility transfer lines.
18. Any absorbent materials used to clean up a small release shall be properly disposed of by a licensed disposal company. Proper paperwork shall be kept on file, and the Spill Response Coordinator or Program Manager notified.

Transfer of Fuel to Aircraft

1. Transfer of fuel from mobile refuelers to aircraft shall be done by appropriately trained tenant and HYA personnel (the operator), only.
2. All fuel flow control devices, such as "dead-man" switches, shall be inspected for proper operation prior to fuel transfer.
3. All vehicles in the fuel transfer area shall be turned off, and sources of ignition eliminated.

4. Wheels should be chocked to prevent vehicle movement during transfer. Magnetic storm drain covers shall be placed on all catch basins within proximity of the vehicle prior to fuel transfer.
5. A drip pan shall be placed under the fuel rack on the vendor fuel delivery truck.
6. All fueling of aircraft shall be completed outside of hangars or maintenance buildings.
7. Personnel shall observe the locations of any stormwater catch basins and avoid refueling at or near such structures.
8. The operator shall ensure that spill response resources to clean up or contain a small spill are readily available.
9. The mobile refueler and aircraft shall be properly grounded and bonded, in accordance with the Airport's Fuel Fire Safety Training Manual.
10. Fuel transfer equipment, including hose material and couplings, should of an appropriate material, and shall be inspected by the operator prior to use.
11. Fuel transfer lines should be located, or "run-out" so as to avoid being run-over, or otherwise damaged, by vehicle traffic in the area.
12. Transfer lines should implement dry-disconnect fittings and couplings that prevent the flow of fuel until properly connected to a mated coupling.
13. The operator shall be aware of all safety and fuel flow control devices, such as pump shut-off and "dead-man" switches.
14. Before fueling, the operator shall ensure that all related aircraft equipment is prepared to accept transferred fuel.
15. While fuel is being transferred, the operator shall position themselves to visually observe transfer lines for leaks or other failures.
16. During fuel transfer, at least one attendant shall be present at all times. There shall be no use of automated pumping systems.
17. Once fuel transfer has begun, the operator shall inspect all fittings, couplings, hoses, and associated transfer materials, for evidence of leaking.
18. In the event of a release, or threat of release, due to a failure in any of the fuel transfer equipment, fuel flow shall cease immediately, and appropriate response actions shall be taken to clean up the release.
19. Fuel transfer shall not occur unless all transfer equipment is being used as intended and approved.
20. Upon completion of fuel transfer, the operator shall ensure that all transfer lines are cleared of their contents before disconnect, so as to avoid any releases during disconnect.

21. The Operator shall be responsible for the proper stowing of all facility transfer lines.
22. Any absorbent materials used to clean up a small release shall be properly disposed of by a licensed disposal company. Proper paperwork shall be kept on file, and the Spill Response Coordinator or Program Manager notified.

APPENDIX D

MOBILE REFULERS INSPECTION SHEET

PAGE 02/09
HYA OPERATIONS
05/18/2010 15:57 5087787771

DAILY [illegible]

AIRCRAFT FUELING EQUIPMENT CHECKS

STATION ____ EQUIPMENT ID# ____ MONTH ____ YEAR ____

DAILY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1. GENERAL CONDITION																															
2. FILTER SUMPS - RECORD RATINGS																															
3. FILTER DIFFERENTIAL PRESSURE - Record PSI																															
4. DEADMAN CONTROLS																															
5. SAFETY INTERLOCKS																															
6. NOZZLE FUELING PRESSURE - Record PSI																															
7. HOSES, NOZZLES & SWIVELS																															
8. STATIC REELS, CABLES & CLAMPS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9. LIFT PLATFORMS																															
10. FIRE EXTINGUISHERS																															
11. SURGE/WASTE TANKS																															
12. AIR TANKS																															
13. REFUELING TRUCK TROUGHS																															
14. REFUELING TRUCK SUMPS - RECORD RATINGS																															
15. REFUELING TRUCK BOTTOM LOADING PRE-CHECK																															
IDENDIFICATION OF PERSON PERFORMING TASKS OR PERSON ACCEPTING RESPONSIBILITY THAT TASKS WERE PERFORMED																															

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); NU = NOT USED; NA = NOT APPLICABLE

RATING OF SUMP SAMPLES: SOLIDS - 1 = CLEAN, 2 = SLIGHT, 3 = PARTICULATE, 4 = DIRTY; MOISTURE CONTENT - A = BRIGHT, B = HAZY, C = CLOUDY, D = WET (FREE WATER), E = SURFACTANTS

REMARKS:

ATA FORM 103.04A
2/16/04

RETAIN ON FILE FOR 12 MONTHS

05/18/2010 15:57 5087787771 HYA OPERATIONS PAGE 03/03

Monthly Truck Check.

AIRCRAFT FUELING EQUIPMENT CHECKS

STATION	EQUIPMENT ID#	MONTH	YEAR

MONTHLY	CONDITION CODE	DATE	CHECKED BY
1. FILTRATION & FREE WATER TESTS			
2. STATIC SYSTEM CONTINUITY TEST (RECORD RESULTS)			
3. NOZZLE SCREENS			
4. FUEL HOSES			
5. SIGNS, LABELS & PLACARDS			
6. METER SEALS			
7. FIRE EXTINGUISHERS			
8. EMERGENCY SHUTDOWN SYSTEM			
9. DEADMAN CONTROL SYSTEM			
10. LIFT PLATFORMS			
11. REFUELING TRUCK INTERIORS			
12. REFUELING TRUCK VENTS & DOME COVERS			
13. REFUELING TRUCK TROUGH DRAINS			
Check First			

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); N/U = NOT USED; N/A = NOT APPLICABLE

ATA FORM 103-64B
11/9/95

RETAIN ON FILE FOR 12 MONTHS

PAGE 04/09
HYA OPERATIONS
05/18/2010 15:57 5087787771

QUARTERLY & ANNUAL TANK CHECK.

QUARTERLY, SEMI-ANNUAL & ANNUAL AIRCRAFT FUELING EQUIPMENT CHECKS

STATION | EQUIPMENT ID# | YEAR

QUARTERLY CHECKS		1ST QTR	2ND QTR	3RD QTR	4TH QTR
1. VEHICLE INSPECTION	CONDITION CODE				
	CHECKED BY & DATE:				
2. PRESSURE CONTROLS	CONDITION CODE				
RECORD PRIMARY & SECONDARY FUEL PRESSURE SETTING (PSI)					
	CHECKED BY & DATE:				
3. WATER DEFENSE SYSTEM - EXTERNAL CHECK	CONDITION CODE				
	CHECKED BY & DATE:				
4. INTERNAL VALVE CHECK	CONDITION CODE				
	CHECKED BY & DATE:				

SEMI-ANNUAL FUEL FACILITY CHECKS (ONLY REQUIRED IF USING REUSEABLE COUPLINGS ON FUEL HOSES)		ID #	ID #	ID #	ID #	ID #
1. PERIODIC HOSE PRESSURE TEST						
	TEST PRESSURE (PSI)	N/A				
	CONDITION CODE					
	CHECKED BY & DATE:					

ANNUAL CHECKS	
1. FILTER ELEMENT CHANGE	CONDITION CODE
	CHECKED BY & DATE:
2. FUELING & DIFFERENTIAL PRESSURE GAUGES	CONDITION CODE
	CHECKED BY & DATE:
3. METER CALIBRATION	CONDITION CODE
	CHECKED BY & DATE:
4. WATER DEFENSE SYSTEM INSPECTION & TES	CONDITION CODE
	CHECKED BY & DATE:

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); NIU = NOT IN USE; N/A = NOT APPLICABLE

ATA FORM 103.04C
11/9/05

RETAIN ON FILE FOR 12 MONTHS

Daily Sump LOG TRUCKS.

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HYA OPERATIONS

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MONTH_____ YEAR:_____

INSPECTION LOG OF AIRCRAFT FUEL SERVICING EQUIPMENT

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TANK	SUMP																				
FILTER	SUMP																				

		21	22	23	24	25	26	27	28	29	30	31
TANK	SUMP											
FILTER	SUMP											

TRUCK NO:_____

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TANK	SUMP																				
FILTER	SUMP																				

		21	22	23	24	25	26	27	28	29	30	31
TANK	SUMP											
FILTER	SUMP											

TRUCK NO:_____

Example: indicating sumped fuel was clear and bright done by J.Doe

NOTE Solids 1) clear 2) slight 3) particulate 4) dirty

Water a) bright b) hazy c) cloudy d) wet

0-07 form 10/99

QUARTERLY INSPECTION - MOBILE FUELERS

Airport: *HYA* Fueling Agent: _____

Date: ____/____/____ Inspector: _____

S - Satisfactory U - Unsatisfactory R - Remark Below	SERIAL #:			SERIAL #:			SERIAL #:		
	S	U	R	S	U	R	S	U	R
	JET A / AVGAS			JET A / AVGAS			JET A / AVGAS		
No Smoking sign in cab									
Flammability Signs/Haz Mat Placards all sides									
Bonding Cables and Clips functional									
Deadman Control for all nozzles									
2 Fire Extinguishers - Proper Type/ Inspected									
Emergency Shutoffs operable and marked									
No Fuel Leaks - Hoses/Gaskets/Valves									
Vehicle Exhaust System - Shielded/Leak free									
No evidence of Smoking- No ashtray in cab									
Vehicle Parking - 10' apart/50' from buildings									
Explosion proof electrical / Light lens intact									
Ignition Sources (Clothing, Shoes, Matches)									
Brake Interlock System									
Proper Fueling Procedures Observed									
Fueling Personnel Meet Training Requirements									
Fueling Personnel Training Records maintained									

No. of Mobile Fuelers

Jet A _____

100 LL _____

Other _____

Remarks:

APPENDIX E

RELEASE NOTIFICATION FORM

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

RELEASE NOTIFICATION FORM

A. Incident Description

Date:_____ Reporter:_____
Time of Incident:_____ Time of Report:_____
Facility Name:_____
Facility Telephone #:_____
Location of Release:_____
Facility Location:_____
Street Address:_____

B. Release Description

Type of material(s) released:_____
Estimated quantity released:_____
Were there injuries to anyone on site?:_____
Did the release impact a catch basin or storm drain?:_____
Describe the ground surface that the release occurred over:_____
_____
Did the release enter or travel along underground utilities (pipes, conduit, etc.)?:
_____
How did the release occur?_____
_____
Other details:_____
_____
Are any surface waters impacted, or in danger of being impacted?
_____
_____

C. Spill Response Program Notification Requirements

IN THE EVENT OF ANY RELEASE, NOTIFY:
PROGRAM MANAGER KATIE SERVIS 508-775-2020
SPILL RESPONSE COORDINATOR ROBERT HOLZMAN 508-778-7770
BARNSTABLE MUNICIPAL AIRPORT RESCUE AND FIREFIGHTING 508-778-7770
IF RELEASE IS LOCATED ON WATER DEPT. PROPERTY NORTH OF 15/33, NOTIFY:
SUPT. THOMAS ROONEY 508-364-9359

D. **State and Federal Notification Requirements**

Does Massachusetts Department of Environmental Protection (DEP) Require Notification?

- **A release of ≥ 10 Gallons Gas/Diesel/Oil requires DEP Notification**
- **A release of an unknown quantity requires DEP notification**

If required, notify Massachusetts DEP at 888-304-1133*

Does the USCG/Federal National Response Center (NRC) Require Notification?

- **A discharge to navigable waters requires USCG/NRC notification**
- **A sheen on water surface is considered a harmful quantity**

If required, notify USCG/NRC at 800-424-8802*

* **record any instructions/information from DEP or NRC in the space provided below.**

E. **Generator Information**

Generator/Responsible Party: _____
Street Address: _____
City/Town: _____State:_____
Contact Person: _____Title: _____
Contact Telephone Number: _____

F. **Documentation of Notification**
(record time of agency/contact notification, instructions, reporting number, etc. here)

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

APPENDIX F

SPILL RESPONSE INVENTORY

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

SPILL RESPONSE RESOURCE INVENTORY

The following items are maintained in a rapid response trailer, located outside the Airport Operations Building. The following quantities were accurate as of January 2020, the date of last inventory. Additional response resources are found on each mobile refueler, and at each fuel transfer depot.

Item	Quantity
Absorbent Spill Pads	200
Speedi-Dry ™	3.5 bags
Spaghetti Booms	(2) 10’ Booms
Pig Mats™ (for acids)	1 roll
Peat Absorbent	5 bags
Lite-Dri™ Absorbent	7 bags
Sea Booms	2
Oil-only Booms	6 rolls
Booms	2 rolls
Miscellaneous Booms	2 rolls
Kollect-a-Kem Pads™	100
Tear off Roll	(1) 25’ Boom
ARG-DRI™ Dikes	2 boxes
Face shields	12
ARG™ Pillows	24
Acid-Resistant PVC gloves	12 pair
Hard Hats	7
Boot covers	60
Tyvek™, x-large coverall	50
Tyvek™, large coverall	50
Tyvek™, medium coverall	50
Vinyl gloves	25
Grate covers	1
Drum patch kit	1
Coal shovel	1
Spade shovel	1
Squeegee	2
Push broom	1
Chocks	1 set
35-Gallon Drum	1

APPENDIX G

FUEL FARM INSPECTION SHEETS

FUEL FARM

FUEL FACILITY CHECKS

STATION | FACILITY | MONTH | YEAR

DAILY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1. GENERAL CONDITION OF TANK YARD																															
2. SECURITY, FIRE & SAFETY DEFICIENCIES																															
3. HOSES, SWIVELS, NOZZLES & COUPLERS																															
4. STATIC REELS, CABLES AND CLAMPS																															
5. FIRE EXTINGUISHERS																															
FUEL LEAKS																															
STORAGE TANK SUMP																															
FILTER SUMP																															
FILTER DIFF. PRESSURE																															
IDENTIFICATION OF PERSON PERFORMING TASKS OR PERSON ACCEPTING RESPONSIBILITY THAT TASKS WERE PERFORMED																															

MONTHLY		DATE	SIGNATURE
1. FILTRATION & FREE WATER TEST			
2. BONDING CABLE CONTINUITY			
3. NOZZLE SCREENS			
4. SIGNS, LABELS & PLACARDS			
5. FLOATING SUCTION			

MONTHLY		DATE	SIGNATURE
6. FIRE EXTINGUISHERS			

CONDITION CODES:

S = SATISFACTORY
C = COMMENT
N/U = NOT USED
N/A = NOT APPLICABLE

NOTE - RECORD SUMP RESULTS & FILTER DIFFERENTIAL PRESSURE ON SEPARATE FORM.

REMARKS:

ATA FORM 103.01A
11/9/2005

RETAIN ON FILE FOR 12 MONTHS

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FUEL FARM MONTHLY CHECK.

AIRCRAFT **FUEL FACILITY CHECKS**		STATION	EQUIPMENT ID#	MONTH YEAR
MONTHLY	CONDITION CODE	DATE	CHECKED BY	
1. FILTRATION & FREE WATER TEST				
2. STATIC SYSTEM CONTINUITY TEST				
3. NOZZLE SCREENS				
4. FUEL HOSES				
5. SIGNS, PLACARDS & LABELS				
6. METER SEALS				
7. FIRE EXTINGUISHERS				
8. EMERGENCY FUEL SHUTOFF SYSTEM				
9. LIFT PLATFORMS				
10. TANK INTERIORS				
11. TANK VENTS & DOWN COMER				
12. TANK TROUGH DRAINS				
REMARKS:				

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); NU = NOT USED; NA = NOT APPLICABLE

RETAIN ON FILE FOR 12 MONTHS

ATA FORM 103.04B
2/15/04

Figure 6-2.8. Form 103.04B - Monthly

05/18/2010 15:57 5087787771 HYA OPERATIONS PAGE 07/09

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HYA OPERATIONS
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Quarterly Fuel Farm Check.

QUARTERLY FUEL FACILITY CHECKS

	STATION		FACILITY		QUARTER	YEAR
1. EMERGENCY SHUTOFF SYS.	ID #	ID #	ID #	ID #	ID #	ID #
DATE & CONDITION CODE						
CHECKED BY:						
2. WATER DEFENSE SYSTEMS						
DATE & CONDITION CODE						
CHECKED BY:						
3. TANK HIGH LEVEL CONTROLS						
DATE & CONDITION CODE						
CHECKED BY:						
4. RECLAIM TANK INSPECTION						
DATE & CONDITION CODE						
RECORD INSP. RESULTS ON 103.07						
CHECKED BY:						

SEMI-ANNUAL FUEL FACILITY CHECKS (ONLY REQUIRED IF USING REUSEABLE COUPLINGS ON FUEL HOSES)

1. PERIODIC HOSE PRESS. TEST	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #
TEST PRESSURE (PSI)										
DATE & CONDITION CODE	N/A									
CHECKED BY:										

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); N/U = NOT USED; N/A = NOT APPLICABLE

RETAIN ON FILE FOR 12 MONTHS

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Farm

ANNUAL FUEL FACILITY CHECKS

	STATION		FACILITY		YEAR	
1. STORAGE TANK INTERIORS	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #
DATE & CONDITION CODE										
CHECKED BY:										
2. DIFFERENTIAL PRESS GAUGES										
DATE & CONDITION CODE										
CHECKED BY:										
3. FILTER ELEMENTS										
DATE & CONDITION CODE										
CHECKED BY:										
4. FILTER/SEPARATOR HEATERS										
DATE & CONDITION CODE										
CHECKED BY:										
5. TANK VENTS										
DATE & CONDITION CODE										
CHECKED BY:										
6. CATHODIC PROTECTION										
DATE & CONDITION CODE										
CHECKED BY:										
7. LINE STRAINERS										
DATE & CONDITION CODE										
CHECKED BY:										
8. WATER DEFENSE SYSTEM										
DATE & CONDITION CODE										
CHECKED BY:										

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); N/U = NOT USED; N/A = NOT APPLICABLE

RETAIN ON FILE FOR 12 MONTHS

ATA FORM 103.01D
11/9/05

QUARTERLY INSPECTION - FUEL STORAGE AREAS

Airport: *HYA* **Fueling Agent:** _____

Date: ____/____/____ **Inspector:** _____

S - Satisfactory U - Unsatisfactory R - Remark Below	Jet A Section			100LL Section			Other _____		
	S	U	R	S	U	R	S	U	R
Fencing / Locks / Signs									
Piping protected from vehicles									
No Smoking signs posted									
Deadman Controls for loading station									
2 Fire Extinguishers-Inspected/Accessible									
Boldly Marked Emergency Cutoffs-Location									
No Fuel Leaks									
Bonding wire/clips at loading stations/operable									
Piping / Pumps bonded & grounded									
No vegetation or materials to spread fire									
No evidence of Smoking									
Hoses in good condition									
Explosion Proof Electrical Equipment									

Remarks:

APPENDIX H

SPILL RESPONSE PRODUCTS AND VENDORS

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

SPILL RESPONSE PRODUCTS AND VENDORS

Storm Drain Hood

Magnetic Storm Drain Cover

Containment Berm

Collapsible Containment Pool

Loose Absorbent

Leak/Spill Containment

Secondary Containment

Portable Spill Kit

Absorbent Boom

Secondary Containment

Vendor Information:

New Pig Corporation
1-800-HOT-HOGS® (468-4647)
www.newpig.com

Arcus Absorbents, Inc.
1-877-227-6727
www.arcusabsorbents.com/

Interstate Products
1-800-474-7294
www.interstateproducts.com

West Coast Spill Supplies
1-888-548-3800
www.spillsupply.com/

SpillKits911
1-800-474-5911
www.spillkits911.com/

Guardian Environmental
1-860-350-2200
www.guardianenvironmental.com

Complete Environmental Products, Inc.
1-800-444-4237
www.cepsorbents.com/

Ben Meadows
1-800-241-6401
www.benmeadows.com

Appendix E

Stormwater Pollution Prevention Plan

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A, Unit #1 • Sandwich, MA • 02563
Phone - 508-833-6600 • Fax - 508-833-3150 • *www.horsleywitten.com*

Stormwater Pollution Prevention Plan

Cape Cod Gateway Airport
Hyannis, Massachusetts

Revision 9, May 2021

Prepared for:
Cape Cod Gateway Airport
480 Barnstable Road Hyannis,
Massachusetts 02601

Prepared by:
Horsley Witten Group, Inc.

STORMWATER POLLUTION PREVENTION PLAN
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS

PREFACE I - FACILITY CERTIFICATION

The following certification statement must be signed and dated by a person meeting the requirements of Appendix B, subsection 11 of the 2021 MSGP. In the event of a revision or modification to this SWPPP, the certification must be re-signed, a record of changes is included as Appendix C.

The undersigned certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based upon my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator:	Certifier / Position:	Signature:	Date:
Cape Cod Gateway Airport	Katie Servis Airport Manager		
Cape Air / Nantucket Airlines	Peter Farrell Director - Supply Chain		
Griffin Avionics	Robert Griffin Facility Manager		
Rectrix Aerodrome Centers, Inc.	Helyne Mederios General Manager		
Hertz Car Rental	John Cahill Manager		
Allies Air	Jody Lewis Office/Freight Manager		
Avis Car Rental	Stephanie Arias Facility Manager		
AMA Marine Lumber	Ed Usowicz		
Cape Flight Instruction	Edmund Cottle		

STORMWATER POLLUTION PREVENTION PLAN
CAP COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS
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STORMWATER POLLUTION PREVENTION PLAN
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS
MAR053164

1.0 INTRODUCTION

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared on behalf of the Cape Cod Gateway Airport (the Airport), formerly known as the Barnstable Municipal Airport, in accordance with the requirements for the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) Stormwater Multi-Sector General Permit (MSGP). On January 15, 2021, EPA announced publication of the 2021 MSGP (Appendix A). This permit replaced the 2015 MSGP, which expired on June 30, 2020 and was administratively continued until the 2021 MSGP was issued. The 2021 MSGP provides coverage for industrial facilities located in five States, and in certain Indian Country lands, as well as at various Federal Facilities in other States where EPA remains the NPDES permit authority.

The 2021 MSGP specifies steps that facility operators must take prior to becoming eligible for permit coverage, including submitting a Notice of Intent (NOI), implementing measures to minimize pollutants in stormwater runoff, and developing a SWPPP. Under the 2008 MSGP, the Airport's stormwater discharges were authorized under permit MAR05CY29. This SWPPP has been prepared to reflect current Airport and tenant operations, and replaces the Airport's existing SWPPP, dated November 18, 1999, revised March 8, 2002, November 18, 2003, December 22, 2009, December 16, 2013, December 2015, and April 2020. The Airport filed a NOI for stormwater discharges under the 2021 MSGP on May 30, 2021, designated as permit MAR053164, and included as Appendix B, along with supporting documentation for the Endangered and Threatened Species and Critical Habitat evaluation required under section 1.1.4 of the 2021 MSGP. A USGS Locus and Site Map are included as Figures 1 and 2, respectively.

In accordance with NPDES permit classifications, Cape Cod Gateway Airport is designated as Standard Classification Code (SIC) 4581, "Airports, flying fields, and Terminal Services", Sector S "Air Transportation Facilities." This SWPPP is designed to assist the Airport in identifying potential sources of stormwater pollutants on Airport property and minimizing or eliminating the potential for those pollutants to enter stormwater discharges from the airport. The SWPPP describes the existing stormwater drainage system, identifies potential pollutant sources and locations, and best management procedures (BMPs) and controls for the prevention of stormwater pollution, and establishes reporting and annual monitoring requirements.

This SWPPP provides information critical to the prevention of stormwater pollution at the Airport, and includes discussions of both tenant and Airport operations, potential pollutants associated with those activities, and potential pollutant storage facilities.

2.0 FACILITY CERTIFICATION

Facility Certification of this Plan is provided in Preface I to this Plan. The facility certification statement must be signed and dated by a person meeting the requirements of Appendix B, subsection 11 of the 2021 MSGP - for a municipality, state, federal, or other public agency, by either a *"principal executive officer or ranking elected official."*

Each tenant representative identified in Section 5.1 is also required to certify this Plan, acknowledging they will maintain operational compliance with the requirements and procedures established in this Plan. Tenant certification of this Plan is included in Preface I. For a corporation, a responsible corporate officer means *"a president, secretary, treasurer, or vice-president of the corporation, or the manager of one of more manufacturing, production, or operating facilities, provided that the manager is authorized to make management decisions which govern the operation of the regulated facility,…… and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures."*

In the event of a revision or modification to this SWPPP, the certification must be re-certified by an Airport representative and tenant representatives. A record of changes is included as Appendix C.

3.0 STORMWATER POLLUTION PREVENTION TEAM

Airport personnel listed in Table 1, below, are the designated members of the Airport Stormwater Pollution Prevention Team (SWPPT). The SWPPT roster lists the names, titles, and contact telephone numbers for each member. The SWPPT is responsible for the implementation, maintenance, and revision of the Plan.

Table 1: Stormwater Pollution Prevention Team Roster

Team Member	Title	Phone Number
Katie Servis	Airport Manager	508-775-2020
Matthew Elia	Assistant Airport Manager	508-775-2020
Bob Holzman	Operations Supervisor	508-778-7770
Hildie Rios	Aviation Fuel Coordinator	508-778-7770
Brad Everson	Airport Rescue Coordinator	508-778-7770
James Barrie	Maintenance Supervisor	508-778-7772
Chris Daniels	Maintenance	508-778-7772

4.0 REVISIONS TO THE STORMWATER POLLUTION PREVENTION PLAN

Revision of the SWPPP is required if any of the following circumstances occur:

- A change in the site which alters the potential for pollutants to be present in stormwater discharges from the Airport;
- A release of a reportable quantity (as defined by CERCLA and Clean Water Act regulations) of oil or a hazardous substance;
- The SWPPP proves to be ineffective in achieving the goal of controlling pollutants in stormwater discharges; or
- Routine facility inspections identify potential pollutant sources which must be addressed.

Revisions to the SWPPP must be documented on the Stormwater Pollution Prevention Plan Revision Log included as Appendix C.

This revision of the SWPPP was completed to update the SWPPP according to site changes at the Airport including construction of a new fuel farm and added drainage facilities. The Site Plan (Figure 3) was updated to reflect current conditions at the Gate F Fuel Farm and new drainage structures.

5.0 GENERAL AIRPORT INFORMATION

The Airport provides commercial airline service and general aviation services to Boston, Cape Cod, and the Islands of Martha's Vineyard and Nantucket. The Airport began operations in 1928 and is the third largest and busiest airport in Massachusetts.

The Airport is located on approximately 645 acres, of which 631 acres lie within the Town of Barnstable, with the remaining 14 acres lying within the Town of Yarmouth. Of the 645 acres, approximately 142 are paved for use as taxiways, runways, and parking aprons, or are covered by buildings and structures. The Airport is bordered to the south by Barnstable Road (Route 132), to the west by Yarmouth Road, to the north by Massachusetts Fish & Wildlife designated conservation area and Route 6, and to the east by an industrial park (Independence Park), and is located at approximately 41.6666° North, 70.2859° West. A locus map and site map are included as Figures 1 and 2.

Structures on Airport property include the Main Terminal and air traffic control tower (ATCT), several service and storage hangars, tenant facilities, employee and passenger parking lots, and the Airport Operations building. Airport property and structures located along runways 6/24 and 15/33 are commonly referred to as the East and North

Ramps, respectively. Structural features of both Ramps are identified on the stormwater drainage plan included as Figure 3.

More than 40 tenant businesses operate on Airport property, providing industry-related services. Tenant operations include passenger airline services, general aviation services, maintenance and servicing of aircraft and associated aviation equipment, aviation fuel transfer, temporary aircraft parking and long term aircraft storage, light transportation warehousing, long and short term vehicle parking lots, overflow vehicle parking lots, rental car agencies, and general facility maintenance. Aircraft maintenance activities include engine maintenance, fluid and filter changes, electronics repair, hydraulic system repair, aircraft body repair, and wheel and tire maintenance and repair. Potential pollutants associated with tenant activities include virgin and waste aviation fuels, oils, antifreeze, deicing solutions, coatings, lubricants, solvents, sealants, and cleaning solutions. Tenants with operations requiring compliance with the provisions of this plan are identified in Section 5.1. Tenant responsibilities and compliance with the Airport's SWPPP are described in further detail in Sections 5.2 and 11.0. The location of potential pollutants is indicated on Figure 2.

Airport Rescue Fire Fighting and Airport Operations (ARFF/OPS) responsibilities include Jet A fuel transfer, supervision of Airport contractors inside the perimeter fence, fire and rescue response activities and emergency spill response. Airport Maintenance activities include building maintenance and grounds-keeping operations, equipment maintenance, maintenance of runways and paved areas, snow removal and deicing fluid recovery operations, emergency spill response, airfield mowing, and utility maintenance. Potential pollutants associated with ARFF/OPS and Maintenance activities include virgin and waste aviation fuels, oils, and antifreeze, deicing solutions, coatings, lubricants, solvents, sealants, and cleaning solutions.

5.1 Airport and Tenant Information

Current ARFF/OPS, Maintenance, and tenant contact information are presented below. Only Airport or tenant operations that are subject to NPDES regulatory requirements are included in Table 2 below.

Table 2: Airport and Tenant Contact Information

Katie Servis Airport Manager 480 Barnstable Road - 2nd Floor Hyannis, MA 02601	Helyne Medeiros Rectrix Aerodrome Center, Inc. Box 13 - 730 Barnstable Road Hyannis, MA 02601
Hildie Rios Aviation Fuel Coordinator 480 Barnstable Road Hyannis, MA 02601	Peter Farrell Cape Air / Nantucket Airlines 660 Barnstable Road Hyannis, MA 02601
Brad Everson Airport Rescue Fire Fighting Coordinator 480 Barnstable Road - 2nd Floor Hyannis, MA 02601	Robert Griffin Griffin Avionics 630 Barnstable Road Hyannis, MA 02601
James Barrie Airport Maintenance Supervisor 480 Barnstable Road Hyannis, MA 02601	John Cahill Hertz Car Rental 480 Barnstable Road Hyannis, MA 02601
Robert Holzman Airport Operations Supervisor 480 Barnstable Road - 2nd Floor Hyannis, MA 02601	Jody Lewis Allies Air 550 Barnstable Road Hyannis, MA 02601
AMA Nantucket Inc. Peter Greaves 130 Mary Dunn Way Hyannis, MA 02601	Cape Flight Instruction Edmund Cottle 150 Mary Dunn Way Hyannis, MA 02601

5.2 Tenant Operations Under the SWPPP

This SWPPP is to be implemented by the Airport and all tenants identified in Section 5.1. Tenant responsibilities under the SWPPP include operational compliance with the practices and control measures described in Section 11, the Airport Deicing Program, and the Airport Spill Prevention Control and Countermeasures Plan (SPCCP). As described in Section 11.6, tenants responsible for deicing aircraft are required to record the volume of deicing fluid used daily and report the cumulative volume of deicing fluid used during each calendar month to the Airport Manager's office. As described in

Section 13.0, the Airport will continue to conduct all facility inspections, stormwater visual assessments, and reporting required under the 2021 MSGP.

6.0 STORMWATER DRAINAGE PLAN

The Stormwater Drainage Plan (Figure 3) identifies stormwater drainage utilities and major facilities at the Airport, and includes the following elements:

- Airport facilities, including a footprint of all buildings, structures, roads, aprons, taxiway and runways, other paved areas, and parking lots;
- Schematic layout of the stormwater drainage system, including ditches, pipes, swales, and an indication of flow direction, to the best of the Airport's knowledge and belief*;
- Drainage areas associated with each stormwater outfall;
- Drainage areas associated with Class V injection wells;
- Areas of pervious surfaces, where stormwater infiltrates directly, including areas receiving sheet flow runoff from impervious surfaces not discharging to a stormwater outfall or Class V injection well;
- Location of potential pollutant sources (Table 3 and Figure 2), as defined in 2021 MSGP, Part 6.2.3.2;
- Location of significant spills or leaks that have occurred in the past three years, as defined in 2021 MSGP, Part 6.2.3.3 (Figure 2);
- Location of all unauthorized, non-stormwater discharges, as defined in 2021 MSGP, Part 6.23.4;
- Fuel storage and transfer areas;
- Vehicle equipment maintenance and/or cleaning areas;
- Liquid storage tanks;
- Transfer areas for bulk substances;
- Machinery; and
- Locations and sources of off-site pollutants that could potentially impact Airport property (Figure 2).

* This SWPPP provides information on the stormwater drainage system based on information provided by the Airport and observed during field reconnaissance.

7.0 DRAINAGE AREAS AND POTENTIAL POLLUTANT SOURCES

The majority of stormwater collected on impervious surfaces at the Airport is managed through a network of catch basins discharging to surface water outfalls, infiltration basins, vegetated swales, and Class V injections wells (more commonly known as leaching catch basins). This SWPPP designates drainage areas discharging to surface waters and infiltration basins as Drainage Areas A, B, C, D, E, F, H, I, J, K, L, M, and N. The SWPPP also identifies areas where stormwater is discharged to Class V injection wells infiltrating directly into the subsurface, designated as Drainage Areas F, G, I, L, and M (Figure 3).

A portion of stormwater in each drainage area is also infiltrated at the edge of impervious surfaces in the form of sheet-flow runoff. The boundaries of these areas are controlled primarily by the topography of the land, and in some cases, the surrounding roads, taxiways, and runways. The majority of Airport property is pervious vegetated airfield surfaces in areas characterized by little to no potential for potential pollutants to be exposed to stormwater.

The Airport conducts regular inspections of facilities on Airport property to ensure compliance with the requirements established in this SWPPP and the Airport's SPCCP. Inventories of potential pollutants stored and used by the Airport and Airport tenants have been completed and updated regularly in support of the SPCCP and SWPPP. For the purposes of this SWPPP, products have been placed into several representative groups, including aviation fuels, antifreezes, sealants, coatings, lubricants, solvents, deicing fluids, and waste products derived from the use of any of these products (Figure 2).

For each drainage area identified in the Stormwater Drainage Plan (Figure 3), potential pollutants and their storage location (Figure 2) are identified and described in further detail below. Locations of buildings and airfield features are referenced to Figure 3. Potential pollutants at the Airport are stored within Airport or tenant buildings or within sealed containment structures (i.e., fuel storage tanks) and are not exposed to stormwater. This SWPPP identifies these as potential pollutants due to the potential for spills or minor releases during delivery, transfer, or disposal procedures, or the potential for exposure following application (i.e., deicing fluid).

Table 3: Drainage Areas and Potential Pollutants

Drainage Area	Size (acres)	Uses	Operator(s)	Existing BMPs	Potential Pollutants
A	25.9	Runway 15/33 and Taxiway A	Airport	Catch basins with sediment traps and a Vortechs water quality unit	Aviation fuel
B	14.9	Main Terminal apron, the South Ramp, and Taxiway A	Airport and tenant mobile refuelers	Catch basins with sediment traps, an oil/water separator and a Vortechs water quality unit	Deicing fluids, fuels, oils, antifreezes, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds
C	31.1	Runway 15/33, Taxiways A and D, the North Ramp, and the Gate F Fuel Farm	Airport/Cape Air	Catch basins with sediment traps, two Oil/Water Separators, Stormtech system, and Vortechs water quality units	Aviation fuel, unleaded gasoline, diesel fuel, oils, antifreezes, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds
D	130.2	Runway 6/24, the Runway 33 approach of Runway 15/33, Taxiway C, and Taxiways B and D	Airport/Cape Air	Catch basins with sediment traps and a Vortechs water quality unit	Aviation fuel and residual deicing fluid
E	7.7	Rectrix Aerodrome Center, Inc. and its associated paved apron, the access road from Barnstable Road to the hangar, and several paved parking lots	Rectrix Aerodrome Center, Inc. and Barnstable Municipal Airport	bioretention basin and catch basins with sediment traps	Aviation fuel and residual deicing fluid
F	14.5	Airport access road connecting Attucks Lane to Barnstable Road, Barnstable Road, tenant parking lots, overflow parking lots, the Griffin Avionics apron area, and the Cape Town Shopping Center parking lot	Airport, Rectrix, Cape Air, Griffin Avionics, and Specialized Automotive	Catch basins, O/WS, Stormtech underground recharge structures, and an infiltration basin	Aviation fuel, oils, gasoline, antifreezes, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds
G	10.7	North Ramp, Taxiway D, and paved apron areas adjacent to tenant hangars	Airport, Rectrix, Cape Air, and Griffin Avionics	Catch basins with sediment sumps and oil/water separator	Aviation fuel, antifreeze, oil, solvents, lubricants, sealants, coatings, and adhesives
H	8.9	Taxiway B, Perimeter road, transient area for	Airport	Catch basins with sediment sumps	Aviation fuel and residual deicing fluid

Drainage Area	Size (acres)	Uses	Operator(s)	Existing BMPs	Potential Pollutants
		aircraft, aircraft support vehicles, and ARFF/OPS and Maintenance vehicles			
I	5.2	Hexagon hangar and Kingsbury Aviation hangars	Tenants and Kingsbury Aviation	Catch basins with sediment sumps	None
J	10.0	East Ramp apron, Taxiway B, and tenant hangars	Airport, Cape Flight Instruction, and Hyannis Hangar LLC	Catch basins with sediment sumps and vegetated swale	Avgas and aviation fuels
K	7.3	East Ramp apron, Taxiway B, Gate P Fuel Farm, and tenant hangars	Airport, Rectrix / Air Cape Cod, and AMA Nantucket Inc.	Catch basins, vegetated swale and Vortechs water quality unit	Aviation fuels, oils, antifreezes, hydraulic fluids, solvents, lubricants, sealants, cleaning compounds, wood and timber products, and deicing fluids
L	10.3	Steamship Authority parking lot	Steamship Authority	None, stormwater infiltrates directly into the ground surface.	automotive fluids including diesel and gasoline fuels, hydraulic fluids, and antifreeze
M	38.5	Taxiway B, ARFF building, East Ramp apron area, the Rectrix / Air Cape Cod hangar, the Airport perimeter road, Mary Dunn Road, and the unpaved runway safety areas of the airfield at the southern ends of Runways 6/24 and 15/33	Barnstable Municipal Airport and Rectrix / Air Cape Cod	None, stormwater infiltrates directly into the ground surface.	Aviation and automotive fuels, oils, and antifreezes, sealants, adhesives, coatings, solvents, and cleaning products
N	13.5	Parking areas and access roads	Barnstable Municipal Airport	Catch basins with sediment sumps and bioretention areas	Fuels, antifreeze, and salt (calcium chloride)
O	1.2	Car service and rental facilities	Avis Rent-A-Car, Hertz Car Rental, and Budget Truck Rental	Catch basins with sediment sumps	gasoline, oil, antifreeze, detergents, surface cleaning products, and automotive interior detailing products

7.1 Drainage Area A

Drainage Area A encompasses the northwest end of Runway 15/33 on the north side of the Airport airfield, impervious surfaces in this area include a portion of Runway 15/33 and Taxiway A. Stormwater from these impervious surfaces is collected through a network of catch basins discharging to Outfall A, located on Upper Gate Pond (Figure 3). Prior to discharge, stormwater is treated by a Vortechs® hydrodynamic separator. Calculated total suspended solid (TSS) removal rates for these water quality units range from 81% to 87% with total petroleum hydrocarbon (TPH) removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment. Potential stormwater pollutants in Drainage Area A include de minimis amounts of aviation fuel released due to aircraft tank expansion venting.

7.2 Drainage Area B

Drainage Area B encompasses the Main Terminal apron area, the South Ramp, and portions of Taxiways A, B, and C. ARFF/OPS and tenant activities within Drainage Area B include aircraft refueling, deicing, maintenance, parking, passenger loading and unloading, and general aviation support services. Potential pollutants associated with activities within Drainage Area B include deicing fluids, fuels, oils, antifreezes, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds, and are described in further detail below.

7.2.1 Main Terminal Apron Area

The Main Terminal apron area is utilized as a staging and parking area for aircraft, unloading and loading area for passengers and baggage, and refueling of aircraft with Jet A and/or 100 Low Lead aviation gas (Avgas) from tenant operated mobile refuelers. Stormwater from the Main Terminal Apron Area impervious surfaces is collected by a network of three catch basins discharging via a 30-inch diameter pipe to Outfall B. Prior to discharge, stormwater is treated by a Vortechs® hydrodynamic separator. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Passenger and baggage loading and unloading operations in the Main Terminal apron area are not expected to result in the exposure of potential pollutants to stormwater.

ARFF/OPS, Cape Air, Griffin Avionics, and Rectrix / Air Cape Cod operate mobile refuelers in the Main Terminal Apron Area. During the winter, Cape Air mobile refuelers are typically staged and parked overnight at the western end of the Main Terminal apron area, (Building 10). Rectrix / Air Cape Cod typically stages their mobile refueler at the East Ramp Gate P Fuel Farm (Area 16), and Griffin Avionics mobile refuelers are typically staged and parked overnight at the Griffin Avionics fuel transfer station

(Building 3). Rectrix / Air Cape Cod typically stages their Jet A mobile refueler near the Rectrix Hangar (Building 1) during the winter, but the Jet A mobile refueler is staged at the designated parking area for mobile refuelers near the Gate F Fuel Farm (Area 7).

7.2.2 South Ramp

The South Ramp is designated as the southern portion of the Main Terminal apron area and is utilized as the central deicing pad and washing pad for aircraft (Area 13, Figure 3). Pavement in the South Ramp slopes in a northerly direction, concentrating all runoff toward catch basin TR-9. Catch basin TR-9 is outfitted with a series of manually operated gate valves that control discharge from the South Ramp. During deicing or aircraft washing operations, the valves are closed and discharge residual deicing fluid or wash water to the Barnstable Water Pollution Control Facility (WPCF). When aircraft deicing or washing is not taking place, the valves are opened, and stormwater is discharged to Upper Gate Pond. Prior to discharge, stormwater is treated by an O/WS and a Vortechs® hydrodynamic separator. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment. Deicing operations and deicing fluid recovery are discussed in greater detail in Section 12.5. When not in use as a deicing pad, the South Ramp is utilized as a transient area for aircraft and ground support vehicles and is characterized similar to other paved apron and taxiway areas in regard to potential pollutants.

7.2.3 Taxiways A, B, and C

A portion of Taxiway A contained in Drainage Area B, are collectively utilized as a transient area for aircraft, aircraft support vehicles, and Airport vehicles. Potential pollutants include aviation fuel released during refueling and aircraft tank expansion venting, and residual deicing fluid runoff from aircraft surfaces following application. Stormwater from these impervious surfaces is collected through a network of catch basins discharging via a 30-inch diameter pipe to Outfall B, located on Upper Gate Pond. Prior to discharge, stormwater is treated by a Vortechs® hydrodynamic separator. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

7.3 Drainage Area C

Drainage Area C encompasses the portion of Runway 15/33 running from the eastern edge of Drainage Area A to the intersection with Taxiway C, portions of Taxiways A, and D, and a portion of the North Ramp including the Gate F Fuel Farm. Potential pollutants in Drainage Area C are associated with aircraft maintenance, fuel transfer and bulk fuel

storage of Jet A aviation fuel, unleaded gasoline, and diesel fuel. Tenant operations within Drainage Area C could potentially introduce pollutants including virgin and waste aviation fuels, oils, antifreezes, and hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds. Stormwater from Drainage Area C is collected through a network of catch basins discharging to Outfalls B and C, located on Upper Gate Pond. Prior to discharge at either location, stormwater is treated by Vortechs® hydrodynamic separators. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment. Two O/WS are located within the Gate F Fuel Farm to intercept petroleum prior to entering the stormwater system in the event of a release.

7.3.1 Runway 15/33 and Taxiways A and D

Runway 15/33 and the taxiway areas are utilized as transient areas for aircraft, aircraft support vehicles, and ARFF/OPS and Maintenance vehicles. Potential pollutants are limited to de minimis amounts of aviation fuel released due to aircraft tank expansion venting and residual deicing fluid runoff from aircraft surfaces following application on the South Ramp deicing pad. Refueling of aircraft does not occur on the Runway or Taxiways within Drainage Area C.

7.3.2 Gate F Fuel Farm

The Gate F Fuel Farm was improved in 2016 by removal of the underground storage tanks and installation of three new 20,000-gallon aboveground storage tanks (AST) containing Jet A aviation fuel. There are also a 4,000-gallon diesel and a 4,000-gallon unleaded gasoline AST.

The new fuel farm features secondary containment, leak detection monitoring, as well as an emergency shut off valve, and two O/WS that connect to the existing storm drain system. The fuel transfer area, where fuel delivery trucks and mobile refuelers are parked during transfers, drains into a concrete secondary containment pad. Stormwater collected within the containment pad is inspected for signs of pollutants by Airport personnel prior to being discharged to an O/WS and the Airport stormwater system. The SWPPP drainage map has been revised following construction to reflect changes to the drainage system and structural controls to prevent or mitigate a release of pollutants.

ARFF/OPS personnel conduct FAA required testing of the fuel from the Gate F Jet A ASTs and the Airport's mobile refuelers daily, generating approximately five gallons of sample fuel per day. Sample fuel is returned to the tank via a recycling system located within the fuel farm.

7.3.3 Griffin Avionics Fuel Transfer Station

Griffin Avionics operates a fuel transfer station located adjacent to the northeast corner of the Griffin Avionics hangar (Building 4, Figure 3) containing two underground 10,000-gallon Avgas USTs. Griffin Avionics and Cape Air refuel mobile refuelers at the Griffin Avionics fuel transfer station. Avgas is transferred into mobile refuelers on the paved apron area adjacent to the fuel pump island, stormwater from impervious surfaces adjacent to the fuel pump island is discharged to two adjacent catch basins located near the fence. These catch basins are connected to the water quality isolator row of the Stormtech subsurface underground recharge chambers.

7.3.4 Building 6 – Hangar 2

Hangar 2, located on the North Ramp of the Airport, is currently occupied by Cape Air. Airport Maintenance also utilizes a portion of the interior hangar space and exterior paved apron for storage of Airport snow removal vehicles. A portion of the stormwater from impervious surfaces surrounding Hangar 2 is infiltrated into the subsurface by a network of Class V injection wells, and is primarily located within Drainage Area G. However, a trench drain with a surface grate was installed in 2016 along the north side of Hangar 2. The drain connects to the new fuel farm and drains to NR-12 then subsequently discharges to Outfalls B and C. Prior to discharge to the Outfalls, stormwater is treated by a Vortechs® hydrodynamic separators. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

Vehicle and product storage in this area occurs primarily inside of Hangar 2 and is not expected to result in an exposure to stormwater. Snow removal equipment is stored on the paved apron area located to the east of the Hangar. Potential pollutants are limited to de minimis amounts of hydraulic fluids, oils, and fuels released during equipment operation or storage.

7.4 Drainage Area D

Drainage Area D is the largest drainage area at the Airport, and encompasses all of Runway 6/24, the Runway 33 approach of Runway 15/33, Taxiway C, and portions of Taxiways B and D. Stormwater from these impervious surfaces is collected through a network of catch basins discharging to Outfall D, located on Lewis Pond, and Class V injection wells discharging directly to the subsurface. Prior to discharge from Outfall D, stormwater is treated by a Vortechs® hydrodynamic separator (Figure 3). Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of

stormwater discharged to the ponds receives pretreatment. Potential stormwater pollutants in Drainage Area D include de minimis aviation fuel released during aircraft tank expansion venting and residual deicing fluid runoff from aircraft surfaces following application.

7.5 Drainage Area E

Drainage Area E encompasses a portion of the North Ramp currently occupied by Rectrix Aerodrome Center, Inc. (Rectrix) and its associated paved apron, the access road from Barnstable Road to the hangar, and several paved parking lots. Stormwater from these impervious surfaces is discharged to a system of two bioretention basins that subsequently discharge into a common infiltration basin (Figure 3). A manually operated shut-off valve located between catch basin RTX-1CB and the landscaped stormwater basin can be shut off in the event of a release to contain spilled material and minimize associated impacts.

Rectrix does not conduct maintenance of aircraft currently; hangar space is used primarily for the storage of aircraft and client vehicles. Rectrix regularly conducts refueling of aircraft on the paved apron area adjacent to the Rectrix hangar. Rectrix has ceased aircraft deicing operations effective December 2016. Any deicing of aircraft that is needed is conducted on the South Ramp deicing pad. Potential stormwater pollutants in Drainage Area E could include small amounts of aviation fuel released during refueling operations and aircraft tank expansion venting, and residual deicing fluid from deicing activities in the event that Rectrix resumes deicing operations. Deicing operations are discussed in greater detail in Section 12.5.

7.6 Drainage Area F

Drainage Area F is comprised of the Airport access road connecting Attucks Lane to Barnstable Road, a portion of Barnstable Road, tenant parking lots, overflow parking lots, a portion of the Griffin Avionics apron area, and a small portion of the Cape Town Shopping Center parking lot. Stormwater from the Airport access road adjacent to the Cape Air hangar (Building 2) is collected through two catch basins and is discharged to Outfall F, located on a retention pond located north of the Shopping Center. Stormwater from the northernmost portion of the access road is collected through a network of catch basins discharging to a system of two landscaped stormwater basins that subsequently discharge into a common infiltration basin. Stormwater from an unpaved parking area located north of the Cape Air hangar is managed by a similar system. The remaining areas of the drainage area include Barnstable Road between the Griffin Avionics and buildings 8 and 9, and a portion of the Griffin Avionics apron area. Stormwater from these areas is collected by a network of catch basins discharging to Stormtech subsurface infiltration structures located in the Griffin parking lot. Potential

pollutants associated with activities within Drainage Area F include aviation fuels, oils, gasoline, antifreezes, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds.

7.7 Drainage Area G

Drainage Area G encompasses the North Ramp of the Airport, including the western portion of Taxiway D and paved apron areas adjacent to tenant hangars. Stormwater from impervious surfaces in Drainage Area G is infiltrated directly into the subsurface through a network of catch basins and Class V injection wells. ARFF/OPS and tenant activities within Drainage Area G include aircraft refueling, maintenance, and storage, and are described in greater detail below. Hangar 2, previously discussed in Section 7.3.4, is also located within Drainage Area G.

7.7.1 Taxiway D

Taxiway D is utilized in a transient nature by aircraft and tenant, ARFF/OPS, and Maintenance vehicles. Potential stormwater pollutants associated with Taxiway D include aviation fuel released during refueling or due to aircraft tank expansion venting. Stormwater collected from Taxiway D is discharged to catch basins and Class V injection wells located along the edge of the taxiway infiltrating stormwater directly into the subsurface.

7.7.2 Building 3 – Griffin Avionics

Griffin Avionics conducts aircraft maintenance and storage and provides general aviation services. Potential pollutants associated with Griffin Avionics activities include virgin and waste aviation fuel, antifreeze, oil, solvents, lubricants, sealants, coatings, and adhesives. Storage and use of all potential pollutants, with the exception of Avgas, occurs inside of the Griffin hangar and is not expected to result in an exposure to stormwater. Waste fuel, oil, antifreeze, and solvent storage areas are located in the northwest and southeast corners of the hangar.

Aircraft undergoing maintenance are typically stored inside the hangar. Occasionally, aircraft undergoing extensive repairs will be weatherproofed and parked on the paved apron area while components are serviced inside the hangar (i.e., during a complete engine rebuild, the fuselage of the aircraft is weatherproofed and stored outside while the engine is rebuilt inside the hangar). The Griffin hangar features a floor drain system discharging to an O/WS and subsequently to municipal sewer through a permitted connection. Griffin staff are responsible for the maintenance of the O/WS.

Stormwater from the impervious surfaces located to the north of the Griffin Avionics hangar is collected in non-leaching catch basins NR-1 and NR-2, which subsequently discharge to NR-23, a Class V injection well infiltrating directly into the subsurface. The impervious surfaces located to the east and south of the hangar building discharge to the Access road stormwater system, described in Section 7.6.

7.7.3 Building 2 – Cape Air

Cape Air conducts aircraft maintenance and storage associated with passenger airline services. Potential pollutants at Cape Air include virgin and waste aviation fuel, antifreeze, oil, and solvents, and lubricants, sealants, deicing fluids, coatings, and adhesives. Storage and use of all potential pollutants, with the exception of Avgas, occurs inside of the Cape Air hangar and is not expected to result in an exposure to stormwater. Cape Air currently stores waste oil, waste antifreeze, and hydraulic oil in a separate storage room located at the southeastern corner of the hangar. Stormwater from the impervious surfaces surrounding the Cape Air hangar is discharged to Class V injection wells NR-24, NR-22, D-1, and D-25, infiltrating directly into the subsurface.

The northern bay of the Cape Air maintenance hangar features a floor drain and O/WS with a direct connection to municipal sewer, to allow for collection and discharge of aircraft washwater. The connection is permitted through the Town of Barnstable. Cape Air staff are responsible for the maintenance of the O/WS.

7.8 Drainage Area H

Drainage Area H is located to the east of Runway 6/24, encompasses the northeast portion of Taxiway B, and is utilized as a transient area for aircraft, aircraft support vehicles, and ARFF/OPS and Maintenance vehicles. Stormwater from Drainage Area H is collected through a network of five catch basins discharging to an infiltration basin. Potential stormwater pollutants in Drainage Area H include small amounts of aviation fuel released due to aircraft tank expansion venting, and residual deicing fluid.

7.9 Drainage Area I

Drainage Area I contains the Hexagon hangar and Kingsbury Aviation hangars, which are utilized for the indoor storage of privately owned aircraft. Aircraft maintenance and aircraft refueling are not permitted in the hangars or in Drainage Area I. There are no potential pollutants associated with current activities in Drainage Area I. Stormwater collected from impervious areas adjacent to these hangars is infiltrated directly into the subsurface through a network of nine Class V injection wells.

7.10 Drainage Area J

Drainage Area J encompasses the northeast portion of the paved East Ramp apron area and a portion of Taxiway B. Activities in this portion of the apron area include temporary and long-term aircraft parking and indoor storage of privately owned aircraft. Paved areas adjacent to the AMA Nantucket Inc. hangar contribute stormwater to both Drainage Areas J and K. AMA Nantucket Inc. activities are described in Section 7.11.3.

7.10.1 East Ramp Apron Area

A portion of the paved East Ramp apron area is located within Drainage Area J and is primarily utilized for the parking of privately owned aircraft. Refueling of aircraft occurs within this drainage area primarily during peak travel periods in the summer months. Stormwater collected from impervious areas primarily discharges to several pervious airfield surfaces located between Taxiway B and Runway 6/24. A portion of stormwater collected on the paved apron area discharges to catch basin ER-13, subsequently discharging to a vegetated swale via Outfall J. Potential pollutants associated with this portion of the East Ramp Apron area include Avgas and Jet A aviation fuels.

Refueling of aircraft fueled by Avgas is completed by Griffin and Rectrix / Air Cape Cod and occurs throughout the East Ramp apron area. Refueling of aircraft fueled by Jet A is conducted by ARFF/OPS and Rectrix /Air Cape Cod and occurs throughout the East Ramp apron area.

7.10.2 Building 21 - Hyannis Hangar LLC

Hyannis Hangar LLC operations in Drainage Area J are limited to the indoor storage of privately owned aircraft. Maintenance activities and aircraft refueling are not permitted in the hangar. Stormwater collected from impervious areas adjacent to the hangar is primarily infiltrated directly into the subsurface at the edge of paved surfaces.

7.10.3 Building 20 – Cape Flight Instruction

Cape Flight Instruction activities include aircraft storage. Stormwater from impervious surfaces located between Buildings 19 and 20 is collected by catch basin ER-29 and discharges to Outfall J-A, discharging to a vegetated swale also associated with Outfall J.

Storage and use of all potential pollutants occur inside of Cape Flight's hangar, and is not expected to result in an exposure of stormwater to potential pollutants.

7.11 Drainage Area K

Drainage Area K encompasses the southern portion of the East Ramp and Taxiway B. Stormwater collected from impervious surfaces in Drainage Area K is collected through a network of catch basins discharging to Outfall D. Prior to discharge from Outfall D, stormwater is treated by a Vortechs® hydrodynamic separator (Figure 3). Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Paved areas adjacent to the AMA Nantucket Inc. hangar also contribute stormwater to Drainage Area J, previously discussed in Section 7.10.3.

The emergency generator for runway lighting formerly located in the southern portion of Drainage Area K has been converted to natural gas.

Tenant activities within Drainage Area K also introduce potential pollutants including both virgin and waste aviation fuels, oils, antifreezes, hydraulic fluids, solvents, lubricants, sealants, cleaning compounds, wood and timber products, and deicing fluids, and are described in further detail below.

7.11.1 East Ramp Apron Area

The East Ramp apron area is primarily utilized for the parking of privately owned aircraft and is most heavily utilized during the summer months. Stormwater collected from impervious areas primarily discharges to several pervious airfield surfaces located between Taxiway B and Runway 6/24. Stormwater collected from impervious surfaces adjacent to Buildings 18 and 19 discharges to Outfall D. Prior to discharge from Outfall D, stormwater is treated by a Vortechs® hydrodynamic separator (Figure 3). Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Potential pollutants associated with this portion of the East Ramp Apron include de minimis amounts of aviation fuel released during aircraft refueling or as a result of aircraft tank expansion venting.

7.11.2 Area 16 – Rectrix / Air Cape Cod East Ramp Gate P Fuel Farm

Air Cape Cod is located on the East Ramp at the Airport and is managed by Rectrix (Figure 3). Rectrix / Air Cape Cod currently operates a 10,000-gallon Avgas AST and a 10,000-gallon Jet-A AST at this location. Rectrix conducts refueling of aircraft on the East Ramp and at the North Ramp hangar facility. Stormwater from areas adjacent to the Rectrix/Air Cape Cod Fuel Farm is discharged to catch basin ER-7 and subsequently Outfall D. Prior to discharge from Outfall D, stormwater is treated by a Vortechs® hydrodynamic separator (Figure 3). Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%.

7.11.3 Building 19 – AMA Nantucket Inc.

Building 19, operated by AMA Nantucket Inc., functions as an aircraft maintenance facility and building construction materials shipping facility. Stormwater collected from impervious surfaces on the southwestern side of Building 19 is discharged to catch basin ER-28 and ultimately to Outfall D. Prior to discharge from Outfall D, stormwater is treated by a Vortechs® hydrodynamic separator (Figure 3). Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Stormwater from the parking lot behind the building discharges to a grassy area with a gravel swale, which leads to a pipe that drains into the same infiltration basin as Outfall J-A. Materials associated with aircraft maintenance include virgin and waste aviation fuel, antifreeze, oil, solvents, lubricants, sealants, deicing fluids, coatings, and adhesives. Exposure of potential pollutants to stormwater is unlikely, as all maintenance activities occur within the hangar, virgin and waste materials are stored within the hangar, and waste material storage locations feature secondary containment structures.

AMA Nantucket Inc. also functions as a building construction material shipping facility, supplying local hardware stores, businesses, and contractors on the island of Nantucket. Materials exposed to stormwater include raw lumber and prepackaged building materials. Stormwater collected in the building materials portion of the yard, located on the eastern side of Building 19, is discharged to catch basin ER-29 and subsequently discharges to a vegetated swale via Outfall J-A.

7.12 Drainage Area L – Steamship Authority Parking Lot

Drainage Area L is located in the southeast corner of the Airport's property, along Mary Dunn Road, and is currently leased to the Woods Hole, Martha's Vineyard, and Nantucket Steamship Authority (Steamship Authority). Drainage Area L is currently utilized by the Steamship Authority as an overflow parking lot and freight staging area in support of their Hyannis ferry terminal. Stormwater in this are infiltrates directly into the ground surface. The overflow passenger vehicle portion of the lot is accessed through an entrance located on Brooks Road and is typically in operation between May and August. The freight portion of the lot is accessed through an entrance located on Mary Dunn Road, and is used throughout the year as necessary to prevent traffic congestion at the Hyannis ferry terminal. Potential pollutants associated with the operation of the Steamship Authority parking lots include automotive fluids including diesel and gasoline fuels, hydraulic fluids, and antifreeze. Vehicles transporting hazardous materials are prohibited from parking in either parking lot. Drainage in this area occurs through infiltration in unpaved surfaces.

7.13 Drainage Area M

Drainage Area M contains a portion of Taxiway B, paved surfaces surrounding the ARFF building, a portion of the East Ramp apron area adjacent to the Rectrix / Air Cape Cod hangar, a portion of the Airport perimeter road and Mary Dunn Road, and the unpaved runway safety areas of the airfield at the southern ends of Runways 6/24 and 15/33. Stormwater collected from impervious surfaces in the drainage area are infiltrated directly into the subsurface through Class V Injection wells or through direct infiltration at the edge of pavement. Potential pollutants associated with activities in these areas are described in further detail, below.

7.13.1 Building 14 – Airport Rescue Fire Fighting and Snow Removal Equipment Facility

Drainage Area M includes the Airport Rescues and Fire Fighting (ARFF)/ Snow Removal Equipment (SRE) facility (Building 14). The Airport Operations facility occupies the offices and garage bays in the northwest portion of the building, while Maintenance occupies the remaining garage bays and office space in the southeast portion of the building. Stormwater from the paved surface along the northeast side of Building 14 and all runoff from the building roof is collected by catch basins ER-1 and ER-3 and are directed to a subsurface infiltration system located near Gate B. Stormwater from the employee parking area adjacent to Building 14 either infiltrates at the edge of pavement in pervious airfield surfaces or is discharged to catch basin RW1533-26 and infiltrated directly into the subsurface. Potential pollutants associated with ARFF/OPS and maintenance activities include virgin and waste aviation and automotive fuels, oils, and antifreezes, sealants, adhesives, coatings, solvents, and cleaning products.

General maintenance for the Airport's fleet of vehicles, SRE, and grounds-keeping equipment occurs within Building 14. The ARFF/SRE garage bays are used primarily for the storage of vehicles, and feature a floor drain discharging to an O/WS for pretreatment prior to discharge to municipal sewer under a permitted connection. ARFF/OPS also operate two 5,000-gallon and a 3,000-gallon Jet A mobile refuelers. The mobile refuelers are parked on the paved area adjacent to the northeast side of Building 14 when not in use.

Several areas within the interior of Building 14 are utilized for the storage of oil, hydraulic oil, cleaning solvents, greases, transmission fluids, antifreezes, waste oil filters, and waste absorbent materials. These potential pollutants are unlikely to be exposed to stormwater as they are stored, transferred, and applied within the building. Airport Maintenance utilizes a 350-gallon split tank double walled AST, located outside at the southeast corner of Building 14, for the storage of waste oil and antifreeze. The potential for these pollutants to be exposed to stormwater during the transfer of products in and out of the AST is minimal.

7.13.2 Runway Safety Areas

Drainage Area M includes unpaved runway safety areas extending from the ends of Runways 6/24 and 15/33. Stormwater in these areas is managed through a network of Class V injection wells located in low lying areas throughout the grassed airfield. These areas also receive sheet-flow stormwater run-off from portions of both runways that are not connected to the Airport's drainage system. Stormwater from the Airport perimeter road is primarily discharged at the edge of pavement, and through several Class V injection wells. Activities in the grassed airfield include turf maintenance and maintenance of Airport lighting and instrumentation. Potential pollutants in these areas are limited to releases resulting from aircraft accidents and maintenance vehicles.

7.13.3 Building 15 – Rectrix / Air Cape Cod

Rectrix conducts minor aircraft maintenance and general aviation support out of Air Cape Cod, an East Ramp hangar facility (Building 15). Stormwater collected from impervious surfaces adjacent to the hangar is discharged to Class V injection wells infiltrating directly into the subsurface. Materials associated with aircraft maintenance activities include virgin and waste aviation fuel, antifreeze, hydraulic oil, oil, and solvents, lubricants, sealants, coatings, and adhesives. Exposure of potential pollutants to stormwater is unlikely, as all maintenance activities occur within the hangar, virgin and waste materials are stored within the hangar, and waste material storage areas feature secondary containment structures.

7.14 Drainage Area N

Drainage Area N encompasses short term and long-term parking areas and access roads utilized by Airport employees, passengers, rental car agencies, and patrons of Airport businesses. Short and long-term parking areas consist of paved surfaces located to the east, west and south of the Main Terminal building (Building 10). The majority of stormwater from these surfaces is discharged to a network of surface bioretention and infiltration structures. Potential pollutants associated with the utilization of these parking areas include fuels and antifreeze from vehicles, and limited application of salt (calcium chloride) when necessary for safe pedestrian travel.

Two natural gas fueled emergency generators for the Main Terminal are located near the southeast corner of Building 10. No pollutants are expected to be release from these units.

7.15 Drainage Area O - Car Rental Service Facilities

Avis Rent-A-Car, Hertz Car Rental, and Budget Truck Rental maintain car service facilities on Airport property south of Barnstable Road. Activities associated with the car service facilities include vehicle refueling, topping off of vehicle fluids, vehicle washing, and detailing of vehicle interiors. Potential pollutants associated with these activities include gasoline, oil, antifreeze, detergents, surface cleaning products, and automotive interior detailing products. Stormwater from this area discharges to catch basins with sediment sumps.

Exposure of potential pollutants to stormwater associated with rental car servicing includes potential releases of automotive fluids, including unleaded gasoline, oil, and antifreeze, and minor releases of residual detergents following vehicle washing. Minor releases of residual detergents likely occur as vehicles leave the garage service bays. The most likely exposure of potential pollutants occurs during vehicle servicing or storage in the facility parking lots, when fluids may be released to the pavement following topping off or as a result of engine malfunction. Rental car vehicles are also staged for customer pickup in the northwest portion of the Main Terminal parking lot, previously described in Section 7.14.

7.15.1 Building 27 – Hertz Car Rental

Hertz Car Rental service activities include vehicle refueling, topping off of vehicle fluids, vehicle washing and detailing, and vehicle storage. Vehicle washing and topping off of fluids occurs within a drive-through, single-bay garage structure. Vehicle wash-water is discharged to a garage floor drain discharging to an O/WS and subsequently to municipal sewer, a similar floor drain is located at the exit of the garage bay to capture residual wash water from exiting vehicles. With the exception of unleaded gasoline, all automotive fluids are stored and transferred within the garage-bay. Vacuuming and surface detailing of vehicles occurs within the garage bay and on the paved surfaces of the parking lot. Hertz currently operates a single-pump unleaded gasoline fuel station supplied by a 10,000-gallon UST, located in the facility parking lot.

7.15.2 Building 28 – Avis Rent-A-Car

Avis Car Rental service activities include the topping off of vehicle fluids, vehicle washing and detailing, and vehicle storage. Vehicle washing and topping off of fluids occurs within a drive-through, single-bay garage structure. Vehicle wash-water is discharged to a garage floor drain discharging to an O/WS and subsequently to municipal sewer, a similar floor drain is located at the exit of the garage bay to capture residual washwater. All automotive fluids are stored and transferred within the garage-bay. Vacuuming and

surface detailing of vehicles occurs within the garage bay and on the paved surfaces of the parking lot.

7.15.3 Building 28 – Budget Truck Rental

Budget Truck Rental service activities include the topping off of vehicle fluids, vehicle washing and detailing, and vehicle storage. Vehicle washing and topping off of fluids occurs within a drive-through, single-bay garage structure. Vehicle wash-water is discharged to a garage floor drain discharging to an O/WS and subsequently to municipal sewer, a similar floor drain is located at the exit of the garage bay to capture residual washwater. All automotive fluids are stored and transferred within the garage-bay. Vacuuming and surface detailing of vehicles occurs within the garage bay.

7.16 Off-site Potential Pollutant Sources

Airport property shares common borders with several retail businesses and fuel stations located along Iyannough Road and Barnstable Road as indicated on Figure 3. A field inspection of properties sharing a border with the Airport indicated three areas of potential run-on of potential pollutants.

7.16.1 Enterprise Rent-A-Car

Enterprise Rent-A-Car operates a vehicle service bay at 332 Iyannough Road. Activities conducted at the service bay include vehicle washing and interior cleaning, and topping-off of fluids. Washwater from the vehicle service bay could potentially be discharged beneath the Airport's perimeter fence to Class V injection well PR-1. Airport Management requested in writing that this practice be discontinued and vehicle servicing at the 332 Iyannough Road facility is limited to vacuuming and interior detailing.

7.16.2 Cape Cod Linen Service

Cape Cod Linen Service operates a linen supply facility located at 880 Attucks Lane, adjacent to the northern extent of Runway 15/33. Activities conducted at the 1.85-acre property include delivery vehicle loading and unloading. Stormwater discharged from this property could potentially run-on to Airport property, discharging to a drainage depression located approximately 50 feet west of the Taxiway A at the nearest point as indicated on Figure 3. According to the owners, servicing of linens and storage of laundering solutions occurs inside of the building, and potential impacts associated with stormwater discharges from this property are not expected to be significant.

7.16.3 Ricciardi Granite and Marble and Cape Cod Winwater Works

Ricciardi Granite and Marble operates a granite and marble stone distributorship located at 174 Airport Road, adjacent to the northern extent of Runway 15/33. Cape Cod Winwater Works operates a plumbing and water supply distributorship out of a portion of the 174 Airport Road facility and 2.12-acre property. Activities associated with both companies include the outdoor storage of building materials, including pallets of stone, PVC piping and fittings, copper pipe, ductile steel, and water supply fixtures. Stormwater discharged from this property could potentially run-on to Airport property, discharging to a drainage depression located approximately 50 feet west of the Taxiway A at the nearest point as indicated on Figure 3. Potential impacts associated with stormwater discharges from this property are not expected to be significant.

8.0 AREAS OF POTENTIAL RELEASES OF POLLUTANTS

As described in Section 7.0, above, spills or leaks of pollutants associated with Airport and tenant activities have the potential to occur across Airport property. The most likely releases of potential pollutants at the Airport are de minimis releases of aviation fuels during refueling operations or due to aircraft tank expansion venting. Refueling locations are determined based upon the location of aircraft, and occur on the North Ramp, East Ramp, and Main Terminal Apron areas in Drainage Areas B, C, E, F, G, I, J, K and M. Delivery, transfer, and storage of bulk quantities of fuel occur at the Gate F fuel farm and Griffin Avionics pump island in Drainage Areas C and F, and Rectrix / Air Cape Cod fuel farm in Drainage Area K. Structural and non-structural preventative measures have been implemented to minimize the potential for pollutant exposure to stormwater and are described in greater detail in Sections 11.0 and 12.0.

Aircraft transportation accidents also have the potential to result in a release of aviation fuels to paved runways, taxiways, apron areas, and unpaved airfield surfaces. Airport records indicate that major aircraft transportation accidents occur, on average, once every five years. The exact location of a release due to an aircraft transportation accident would determine what, if any, drainage utilities could potentially be impacted.

Deicing activities and washing of aircraft is centralized at the South Ramp deicing pad and is prohibited from all other locations. Preventative measures have been implemented to minimize the potential for pollutant exposure to stormwater and are described in greater detail in Sections 11.0 and 12.0. Salt (calcium chloride) is used sparingly at the Airport, due to corrosion concerns salt is only utilized outside of the airport fence line. Small amounts of salt are stored in packages in a shed adjacent to the Main Terminal building (Building 10) and is only used on walkways and some parking areas within Drainage Area N. The Airport does not have any salt storage piles on site. FAA-approved sand is stored within the ARFF/SRE building for application to airfield

surfaces; used sand is then collected by sweepers. Due to the limited exposure of salt to stormwater, salt is not considered to be a pollutant of concern for the Airport.

In addition to aviation fuels, pollutants associated with aircraft maintenance have the potential to be released during delivery, application, or transfer. Delivery of aircraft maintenance products is typically by common bulk carrier. Delivery and removal of potential pollutants associated with aircraft maintenance activities is not expected to result in a significant exposure to stormwater, given the infrequent nature of product delivery and removal, and the relatively small quantities of products being transferred. Small releases of pollutants during aircraft maintenance typically occur inside the maintenance hangar, and are not expected to result in exposure to stormwater. Potential pollutants may be exposed to stormwater following the completion of maintenance activities, when the aircraft is returned to service or staged on an apron area.

In accordance with Section 10.1 of the SWPPP, allowable non-stormwater discharges from building roofs include condensation from heating, ventilation, and air conditioning (HVAC) systems. Discharge of stormwater from roof areas is not considered to be a potential source of stormwater pollutants.

8.1 Potential Pollutants Associated with Airport Activities

Table 4 lists the potential pollutants associated with each identified activity. The list of potential pollutants includes all materials that have been handled, stored, or disposed at the Airport property.

Table 4: Potential Pollutants Associated with Airport Activities

Industrial Activity	Associated Pollutants
Fuel delivery and transfer	Jet A fuel, low lead fuel, gasoline, and diesel fuel
Vehicle, aircraft, and equipment maintenance	Fuels, oils, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds
Deicing activities	Deicing fluids (glycol)
Vehicle washing	Fuels, oils, and cleaning solvents
Snow removal activities	Sediment and salts

9.0 REPORTABLE SPILLS AND LEAKS WITHIN THE PREVIOUS THREE YEARS

- In April 2021, a release of approximately three gallons of motor oil and 16 gallons of aviation gas occurred in the grass area near Taxiway D (Figure 2) from

an aircraft. The aircraft experienced difficulty landing, and resulted in a crash by Taxiway D. While the condition of the aircraft was being assessed, a leak occurred from the wing. The release drained from the damaged area onto the pervious ground surface. Airport personnel responded to the crash and spill. Airport personnel notified the Massachusetts Department of Environmental Protection (MassDEP) within two hours of determining the release was reportable. Consistent with the Massachusetts Contingency Plan, a Licensed Site Professional responded to the release to initiate response actions. Approximately 16-cubic yards of impacted soils were excavated and disposed of properly.

- In November 2019, a release of 51 gallons of Jet A fuel occurred at the Gate F Fuel Farm (Figure 2 and 3) from a hand operated pump located within the concrete secondary containment structure. The hand pump was not fully closed after the previous use and was the source of the release. Due to a storm drainage valve being opened, the release drained from the secondary containment structure into an O/WS. Airport personnel responded to the spill and applied absorbents. Airport personnel notified the fire department and the Massachusetts Department of Environmental Protection (MassDEP) within two hours of identifying the release. Clean Harbors and a Licensed Site Professional responded to the release and pumped out and cleaned the O/WS, recovered absorbents, and cleaned the interior of the concrete secondary structure with a citrus based degreaser. The release was contained by the concrete secondary containment and the OW/S and there was no discharge of pollutants to stormwater and/or surface waters. Due to this incident, a new procedure was implemented by the Airport on November 26, 2019 for the operation of the hand pump and storm water drain value at the fuel farm. The new procedure is as follows:

<u>Hand Pump Operation</u>

- Prior to hand pump usage by Airport staff, verify that the stormwater drain valve located adjacent to the secondary containment structure is in the closed position.
- Operate hand pump as necessary to obtain fuel sample.
- After sample collection, verify hand pump is in the closed position.

<u>Stormwater Drain Valve</u>

- Following a rain event, an Airport staff member will perform an inspection of any standing water within the concrete secondary

containment and the drain structures within the concrete containment pad, looking for a sheen or any indications of petroleum. All observations must be recorded in the Rainwater Inspection Form (Appendix B of the SPCCP) which will be kept with the SWPPP in the Main Terminal.

- Once the Airport staff member confirms there are no signs of petroleum, the storm water valve should be opened, and the Airport staff member will monitor the draining of the open manhole as the water moves into the O/WS.

- Once the draining of the secondary containment is completed the stormwater valve is to be closed.

No other releases of pollutants to stormwater drainage utilities have occurred in the last three years. During this time, minor releases of aviation fluids (less than the MassDEP Reportable Quantity of 10-gallons) have occurred to paved surfaces that are exposed to stormwater; however, immediate containment and removal procedures implemented by tenant ARFF/OPS, Maintenance, and tenant personnel prevented subsequent impacts to drainage utilities.

10.0 NON-STORMWATER DISCHARGES EVALUATION

Section 6.2.3.4 of the 2021 MSGP requires an evaluation for the presence of non-stormwater discharges to stormwater drainage utilities. Several inspections of the Airport's drainage utilities have been conducted in recent years in conjunction with the Airport's existing SWPPP, in response to the discovery and subsequent elimination of non-stormwater discharges to drainage utilities, and in preparation for revision of the Airport's SWPPP.

Inspections of Outfalls A, B, and C, located on Upper Gate Pond, and Outfall D, located on Lewis Pond, are conducted on a quarterly basis by Airport Maintenance personnel.

10.1 Allowable Non-Stormwater Discharges

In accordance with the 2021 MSGP, the following non-stormwater discharges are allowed:

- Discharges from firefighting activities;

- Discharges from fire hydrant flushing;

- Discharges from potable water sources, including water line flushing;

- Discharges from irrigation drainage and lawn watering;
- Discharges from routine external building washing that does not use detergents or other compounds;
- Discharges from pavement wash-waters where spills or leaks of potential pollutants have not occurred (unless all spilled material has been removed) and where detergents are not used;
- Discharges from air conditioning condensate;
- Discharges from springs or uncontained groundwater; and
- Discharges from foundation or footing drains where the discharge is not contaminated with pollutants.

10.2 Elimination of Non-Allowable Non-Stormwater Discharges

Non-stormwater discharges that are not authorized under the 2021 MSGP and UIC Program have been eliminated through the closure of hangar floor drains connected to leaching catch basins, and the implementation of a zero discharge policy.

Prior to 1997, site investigation activities at the Airport identified hangar floor drain discharge to Class V injection wells as a source of soil and groundwater contamination, associated with oil and/or solvents from aircraft maintenance activities. Closure of hangar floor drains occurred in conjunction with assessment and remediation of contaminated soil and groundwater source areas associated with these discharges.

Routine inspection of the Airport's stormwater drainage utilities and tenant facilities in 2006 led to the identification of non-stormwater discharges to Class V injection wells adjacent to Hangars 1 and 2. In response, Airport Management instituted a zero discharge policy for all airfield operations, as described in Section 11.1. Regular facility inspections conducted by Airport Management include a visual inspection of hangar floor drains to confirm that all closed drains remain closed.

10.3 Existing Non-Stormwater Discharges

Aircraft washing activities are conducted indoors on Airport property at the Griffin Avionics hangar and the Cape Air Hangar. Vehicle washing activities are conducted indoors at the ARFF/SRE Building, Budget Truck Rental, Avis, and Hertz. These activities are considered non-allowable non-stormwater discharges. All vehicle and aircraft wash water in these locations is collected through floor drains and treated by to O/WS prior to discharging to the municipal sewer in accordance with Section 2.1.2.9 of the 2021

MSGP. Further details regarding these activities and spill path analysis are described in Section 7.

10.4 Snow Removal

All snow removal activities at the Airport follow the FAA-approved Snow & Ice Control Plan. This plan is a chapter of the HYA-specific Airport Certification Manual maintained by the Airport to meet the requirements of the FAA airport certification program. As indicated above, small amounts of salt and sand are stored within the Main Terminal building, and is only used on walkways and some parking areas within Drainage Area N.

The deicing pad falls into the Priority 1 areas along with the balance of the main terminal apron. Snow that falls in this area is moved with a large front-end loader equipped with a 40-foot box plow. The snow is piled at the south end of the apron initially, and then moved and piled into an adjacent drainage basin by a front-end loader with a bucket attachment. Snow removed from this area **does not** come into contact with deicing fluids as is not considered to be contaminated.

The deicing pad is closed during snow removal operations; this is noted on the Snow Report. Once the deicing pad apron is clear of snow it is reopened opened for use. De-icing operations will only occur once the snow has been removed, de-icing operations and snow removal operations on the de-ice pad are not conducted simultaneously.

11.0 NON-STRUCTURAL STORMWATER POLLUTION CONTROL MEASURES

Best Management Procedures (BMPs) incorporated into Airport and tenant activities reduce the likelihood or frequency with which potential pollutants are released to impervious surfaces during normal operations. BMPs implemented by the Airport are described in further detail below.

11.1 Minimization of Stormwater Exposure to Potential Pollutants

Tenant and Airport facilities are prohibited from storing potential pollutants in areas exposed to stormwater. Products associated with maintenance activities and storage areas for waste products are within hangar facilities, minimizing the potential for exposure to stormwater. In a November 20, 2007 memorandum to all Airport tenants, the Airport implemented a zero discharge policy. The policy requires all tenants to utilize the designated deicing pad and prohibits all discharges of aircraft or vehicle wash water, unless the vehicle washing occurs within a hangar, where wash water is collected, treated by O/WS, and discharged to municipal sewer. A copy of the deicing program is included as Appendix D. Airport Management provides frequent reminders of the requirements of the zero discharge policy to Airport tenants. The South Ramp

deicing pad may also be utilized by tenants for the washing of aircraft. Aircraft deicing and washing is monitored by Airport Operations and must be conducted in accordance with the Airports Deicing and Washing Program, described in Section 11.6.

11.2 Facility Maintenance

Facility maintenance practices implemented at Airport and tenant facilities are effective in reducing the cumulative, non-point source impacts associated with site activities by reducing the spread of potential pollutants due to vehicle and foot traffic, reducing the potential for accidental releases of potential pollutants, and aiding in the observation and containment of accidental releases.
Good housekeeping practices currently implemented at Airport and tenant facilities on a regular basis include:

- Keeping impervious surfaces adjacent to buildings free of surface debris with brooms;
- Utilizing absorbent materials and drip pans to contain minor discharges of potential pollutants to facility floors in maintenance areas, and promptly removing and containerizing for proper disposal;
- Keeping facility floors free of surface debris to prevent the spread of potential pollutants due to foot traffic;
- Removing surface debris from runways and taxiways seasonally with a streetsweeper;
- Maintenance of hangar doors and roofs to prevent stormwater from entering the facility during precipitation events;
- Regular garbage and waste container consolidation into common collection containers to encourage proper handling of solid waste;
- Using appropriately sized and constructed containers for the storage of maintenance products or waste products to reduce the potential for a release during storage, application, transfer, or transfer for disposal;
- Maintenance and storage of maintenance products and waste products indoors, properly sealed and labeled to prevent misuse or premature disposal;
- Providing secondary containment for storage of maintenance products or waste products;

- Prohibition of washing of paved surfaces or facility floors resulting in a discharge of wash water to drainage utilities. Washing of facility floors is permitted where wash water is discharged to municipal sewer through a permitted municipal sewer connection or to a tight tank for proper disposal. All other aircraft washing activities are only permitted at the South Ramp deicing pad;

- Performing maintenance activities in authorized indoor areas;

- Maintaining an organized inventory of material used in maintenance areas;

- Inspecting and maintaining existing BMPs, including but not limited to swales, Vortechs units, bioretention areas, infiltration basins, leaching catch basins, O/WS, and chambers;

- Implementing spill and overflow practices at the primary maintenance locations and fueling delivery and transfer locations; and

- Implementation of the SPCCP.

11.3 Equipment Inspection and Maintenance

The Airport and tenants conduct regular inspections of all fuel storage tanks, fuel transfer equipment, and mobile refuelers. Inspections are conducted by properly trained personnel. Fuel farm and mobile refueler inspection schedules and items are summarized below. Snow removal, airfield maintenance, and ground equipment is inspected prior to use and during routine maintenance to identify any maintenance deficiencies and ensure proper operation. Routine inspections are likely to reveal a condition that would result in a release of potential pollutants (i.e., hydraulic or engine oil leak). In the event that maintenance is required, the equipment in need of service is removed from service until repairs have been made.

On a daily basis, mobile refuelers are inspected for:

- General condition, filter sumps, filter differential pressure, deadman control operation, brake interlocks, nozzle fueling pressure, hoses, swivels and nozzles, ground reels, cables and clamps, fire extinguishers, tanker troughs, tanker sumps, condensation in air tanks, ladders, mechanics tools, and diesel fuel level.

On a daily basis, the following areas at the Airport Fuel Farm are inspected:

- Tank sumps, fuel sumps, filter sumps, hoses, swivels, and nozzles, ground reels, cables and clamps, fire extinguishers, waste fuel tanks, differential pressure, and primary pressure.

On a monthly basis, mobile refuelers are inspected for:

- Filtration test, grounding cable continuity test, nozzle screens, signs and placards, meter seals, emergency shutdown system, tanker interiors, tanker vents and dome covers, tanker trough drains, and fire extinguishers.

On a monthly basis, the Airport fuel farm is inspected for:

- Grounding cable continuity, nozzle screens, signs and placards, floating suctions, and fire extinguishers.

On a quarterly basis, mobile refuelers are inspected for:

- General condition, pressure controls, secondary pressure, and water defense system.

On a quarterly basis, the Airport Fuel Farm is inspected for:

- Tank high level controls, emergency shutdown system, and water defense system.

On an annual basis, mobile refuelers are inspected for:

- Filter elements, pressure gauges, and fuel meters.

On an annual basis, the Airport fuel farm is inspected for:

- Interior tank condition, pressure gauges, filter elements, line strainers filter/separator heaters, tank vents, tank high level controls, and facility condition.

Tenants are required to maintain all equipment in good operational condition, and conduct regular inspections of any fuel storage or transfer areas in accordance with State, Federal, or FAA requirements. Any deficiencies in tenant owned or operated equipment that are observed by Airport personnel are reported to the tenant immediately.

11.4 Drainage Utilities Maintenance

The Airport is responsible for maintaining approximately 300 catch basins and 85 Class V injection wells located across Airport property. All entry points into drainage utilities

are equipped with steel grates to prevent large debris from entering the drainage structure. The majority of catch basins comprising the drainage system discharging to surface water also feature a sump to trap coarse solids and debris able to pass through the steel grate.

Annual maintenance of the drainage utilities includes the removal of sediment and debris collected in catch basin sumps to maintain efficient removal of stormwater during peak runoff events. Annual maintenance activities are concentrated on areas determined to require frequent maintenance, portions of the Airport's drainage system require less frequent inspection and maintenance. O/WS are inspected and cleaned as needed. Class V injection wells discharging directly to the subsurface are also inspected and maintained on an annual basis to ensure efficient leaching at the base of the drainage structure.

11.5 Spill Prevention Control and Countermeasure Plan

Under Code of Federal Regulations 40, Subpart 112 (40 CFR 112) the Airport is required to develop and implement a SPCCP. The Airport's SPCCP establishes procedures and methods to prevent facility discharges of oil into surface waters and adjoining shorelines. Additionally, Massachusetts State regulations (310 CMR 30.521(4)) require SPCCPs, with added requirements to comply with State 310 CMR 30 Hazardous Waste regulations. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Regulation 40 CFR 300.3, and the Resource Conservation and Recovery Act (RCRA) Regulation 40 CFR 264.52 expand the scope of the SPCCP to incorporate hazardous materials as defined in 40 CFR 302.3. A copy of the SPCCP is included in Appendix E.

The Airport's SPCCP provides information critical to the prevention of, and response to, releases of oil and/or hazardous materials at the Airport, and includes discussions of tenant operations, storage facilities, and transfer procedures. The Airport assumes no liability or responsibility for tenant operational compliance with applicable Local, State, and Federal Regulations, including the requirements established in 40 CFR 112, and described in the SPCCP. Tenant operations meeting the materials storage thresholds established in 40 CFR 112 are required to maintain a SPCCP independently of the Airport's SPCCP. Copies of the Airport's SPCCP and associated Emergency Response Action Plan are maintained at the Airport Manager's office and ARFF/OPS and Maintenance offices.

The Airport's SPCCP establishes measures to prevent releases, and procedures for responding to, releases of oil or hazardous materials, including:

- Procedures for material storage and labeling;

- Procedures for delivery of fuel from vendors;
- Procedures for the refueling of aircraft;
- Spill response procedures;
- Secondary containment requirements in material storage areas; and
- Emergency notification procedures for facility personnel, emergency response personnel, and applicable regulatory agencies.

11.6 Aircraft Deicing and Washing Program

The Airport has implemented an Aircraft Deicing and Washing Program establishing procedures for Airport and tenant personnel during use of the South Ramp pad for aircraft deicing or washing. A copy of the Airport's Aircraft Deicing and Washing Program is included as Appendix D.

The South Ramp Deicing and Washing Pad was constructed by the Airport to provide tenants and aircraft operators with a central location to complete these activities, and reduce the potential for environmental impacts. The MassDEP, Cape Cod Commission (CCC), Barnstable Department of Public Works (DPW), and Barnstable WPCF have reviewed the construction plans and may conduct further review and/or inspection of the operations and record keeping procedures. Compliance with the procedures and requirements established in the Program is necessary to avoid increased oversight or potential penalties from these agencies.

Aircraft deicing is typically necessary at the Airport between the months of October and March. As required under the 2021 MSGP, tenants are required to maintain a record of deicing chemical usage, and report that amount to the Airport Manager's office on a monthly basis. The Airport will report the cumulative deicing chemical used during the prior year in the Annual Report.

11.7 Employee Training

Employee training programs shall inform personnel responsible for implementing activities identified in the stormwater pollution prevention plan or otherwise responsible for stormwater management of the components and goals of this SWPPP. Training includes spill prevention and emergency response, good housekeeping practices, fueling procedures, and waste oil and hazardous waste management practices. These trainings are to be held annually and within 30 days of any revision to the SWPPP or change in facility design or construction that would affect stormwater

discharges. Pollution prevention team members shall meet at least twice a year to discuss facility operations and determine if revisions to the SWPPP are necessary.

The Airport conducts several different formal and informal training events to promote operational compliance with the elements of the SWPPP, SPCCP, and state and federal hazardous materials handling and disposal regulations. Federal regulations 14 CFR Section 139.321 (e) (1) further requires that all Airport employees who fuel aircraft, accept fuel shipments, or otherwise handle fuel receive at least initial on-the-job training and recurrent instruction every 12 consecutive calendar months in fire safety from a trained supervisor. An employee training log will be kept with the SWPPP in the Main Terminal.

12.0 STRUCTURAL STORMWATER POLLUTION CONTROL MEASURES

A variety of structural controls and management practices have been implemented at the Airport to reduce the amount of stormwater discharged to surface waters. As discussed in Section 7.0, stormwater from several drainage areas is discharged to Class V injection wells that infiltrate directly into the subsurface. Construction and redevelopment of the Main Terminal, access road, and parking facilities in recent years has relied upon the installation of Class V injection wells, bioretention basins, and infiltration basins to accommodate stormwater drainage and reduce stormwater discharges to the ponds. Additional structural controls implemented at the Airport to reduce stormwater pollution are described in further detail below.

12.1 Area 7 – Gate F Fuel Farm

The Gate F fuel farm is utilized for the storage and transfer of Jet A, diesel, and unleaded gasoline fuels. Fuel storage containers feature secondary containment, overfill protection, interstitial monitoring, and cathodic protection. Fuel transfer procedures at the Gate F fuel farm occur on paved surface draining to two catch basins, which subsequently discharge to an O/WS. Spill response resources including catch basin covers, absorbent materials, and a pop up pool are maintained in weatherproof containers at the Gate F fuel farm for rapid deployment. A new fuel farm facility was constructed Gate F Fuel Farm in 2016. The new fuel farm features three 20,000-gallon ASTs containing Jet A and Avgas. The ASTs feature leak detection monitoring and secondary containment. The ASTs and all associated transfer piping are located within a concrete containment pad that has sufficient capacity to contain a release of the entire contents of one of the ASTs. The fuel transfer area, where fuel delivery trucks and mobile refuelers are parked during transfers, drains into the concrete containment pad. A shut off valve was installed in the case of a release. Stormwater collected within the containment pad is inspected for signs of pollutants by Airport personnel prior to

being discharged to an O/WS and the Airport stormwater system. The Gate F Fuel Farm is designated as Area 7 in the buildings/areas table on Figure 3.

12.2 Area 16 – Rectrix / Air Cape Cod Fuel Farm

The Rectrix / Air Cape Cod fuel farm is currently utilized for the storage and transfer of Avgas and Jet A fuels and features secondary containment and overfill protection. Spill response resources maintained in a weatherproof container at the facility include magnetic catch basin covers and absorbent materials. The Rectrix Aviation fuel farm is located approximately 500 feet east of the ARFF/SRE building, and additional response resources that are stationed there could be rapidly deployed in the event of a release.

12.3 Area 4 – Griffin Avionics Fuel Farm

The Griffin Avionics fuel farm is utilized for the storage and transfer of Avgas, and features overfill protection, cathodic protection, and leak detection. Spill response resources maintained at the facility include absorbent materials. A release from the Griffin Avionics fuel farm would not have the potential to discharge to Upper Gate or Lewis Ponds, as the drainage structures for this area infiltrate directly into the subsurface at the Griffin Lot.

12.4 Oil/Water Separators (O/WS)

There are several O/WS located across the airport. The Cape Air Hangar and the Griffin Hangar (Buildings 2 and 3, respectively) each have an O/WS to accommodate any discharges from inside the hangars, where maintenance activities occur. There is a network of catch basins north of 600 Barnstable Road which discharge to another O/WS before discharge to a leaching basin. There are two O/WS to address stormwater discharges surrounding the Gate F Fuel Farm, detailed above in Section 12.1. Stormwater discharges from the South Ramp are directed to an additional O/WS located near the South Ramp deicing pad. The ARFF/SRE Facility (Building 14) also has an O/WS to accommodate any discharges from inside the building, where maintenance activities occur.

12.5 Deicing Location Pollution Control Measures

Deicing operations are conducted at the South Ramp. Due to the decreased environmental impacts over alternative formulations, the Airport currently requires all tenants to utilize Type I propylene glycol based deicing fluids. The paved apron in the South Ramp Deicing Pad drains to a single, centrally located catch basin that discharges to the Barnstable WPCF during aircraft deicing or washing. During all other times, this

same catch basin discharges to the Airport's stormwater conveyance system that ultimately discharges to Upper Gate Pond. The discharge system is controlled through a series of manual gate valves that are operated by Airport Operations personnel. Notification of Airport Operations prior to deicing or washing is required, to confirm that the system is discharging to the WPCF. Additional information is provided in the Airport's Deicing Program (Appendix D).

12.6 Erosion and Sediment Controls

12.6.1 Temporary Erosion and Sediment Controls

Temporary erosion and sediment controls (E/SC) are implemented to prevent sediment from entering the stormwater drainage system during construction activities. Temporary BMPs used at the Airport include but are not limited to silt socks, silt fences, inlet protection, and stabilized construction entrances. BMPs are selected by an engineer completing the work and are implemented prior to construction.

12.6.2 Post-Construction Erosion and Sediment Controls

There are approximately 300 catch basins located across Airport property. All entry points into drainage utilities are equipped with steel grates to prevent large debris from entering the drainage structure. The majority of catch basins comprising the drainage system discharging to surface water also feature a sump to trap coarse solids and debris able to pass through the steel grate.

Post-construction BMPs include but are not limited to swales, bioretention areas, infiltration basins, catch basins with sediment traps, O/WS, and Vortechs® hydrodynamic separators. Stormwater from the following areas is collected through a network of catch basins and is treated by Vortechs® hydrodynamic separators prior to discharge to an outfall:

- Stormwater from Drainage Area A is collected through a network of catch basins and is treated by a Vortechs® hydrodynamic separator prior to discharge to Outfall A, located on Upper Gate Pond. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

- Stormwater from Drainage Area B is collected through a series of catch basins and is treated by a Vortechs® hydrodynamic separator prior to discharge to Outfall D, located on Lewis Pond. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the

installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

- Stormwater from Drainage Area C is collected through a network of catch basins discharging to Outfalls B and C, located on Upper Gate Pond. Prior to discharge at either outfall, stormwater is treated by a Vortechs® hydrodynamic separator. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

- Stormwater from these impervious surfaces in Drainage Area D is collected through a network of catch basins discharging to Outfall D, located on Lewis Pond, and Class V injection wells discharging directly to the subsurface. Prior to discharge from Outfall D, stormwater is treated by a Vortechs® hydrodynamic separator (Figure 3). Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

12.7 Spill Response Resources

In addition to the facility specific spill response resources described above, ARFF/OPS maintains a rapid deployment trailer outfitted with magnetic catch basin covers, pop up pools, absorbent materials, non-sparking hand tools, and personnel protective equipment. Smaller quantities of spill response resources are maintained on ARFF/OPS vehicles.

ARFF/OPS and Maintenance personnel designated to respond to spills maintain Occupational Safety and Health Administration (OSHA) required hazardous waste operations training (HAZWOPER) and are familiar with emergency spill response procedures and emergency notification procedures.

13.0 MONITORING PROGRAM

Airport Management conducts regular formal and informal inspections of tenant operations to ensure operational compliance with the zero discharge policy and the Airport's SWPPP and SPCCP. In accordance with Part 3 of the 2021 MSGP, the Airport must conduct routine facility inspections and quarterly visual assessments of stormwater discharges, and document those inspections. Monitoring requirements are described in greater detail in Sections 13.1, 13.2, 13.3, and 13.4.

Under Part 8, Subpart S of the 2021 MSGP, airports exceeding the deicing chemical usage thresholds of 100,000 gallons of glycol and/or 100 tons of urea deicing fluids must conduct benchmark sampling of stormwater discharges. On average, annual tenant deicing operations at the Airport utilize approximately 40 gallons of propylene glycol deicing fluids, excluding the Airport from having to conduct benchmark sampling.

13.1 Routine Facility Inspections

13.1.1 Routine Facility Inspection Procedures

The Airport is required to conduct routine facility inspections of all areas of the facility where industrial materials or activities are exposed to stormwater, areas identified in the SWPPP, areas identified as potential sources of pollution, discharge points, and all stormwater control measures, on a quarterly basis, and on **a monthly basis** during the deicing season (any month during which deicing chemicals are applied). The routine facility inspections must be performed during normal operational periods, and must be conducted by qualified personnel, as defined in Appendix A Section A.1. of the 2021 MSGP (Appendix A), with at least one member of the Airport's stormwater pollution prevention team participating. At least once each calendar year, the routine facility inspection must be conducted during a period when a stormwater discharge is occurring. At least one Routine Facility Inspection must be conducted when deicing of aircraft is occurring.

13.1.2 Routine Facility Inspection Documentation

The Airport is required to document the findings of each routine facility inspection performed and maintain the documentation onsite with the SWPPP as required in Part 3.1.6 of the 2021 MSGP. The Airport is not required to submit routine facility inspection findings to EPA, unless specifically requested to do so. A Routine Facility Inspection report form (NPDES – 1) is included as Appendix F. At a minimum, documentation of each routine facility inspection shall include:

Routine facility inspections shall be conducted by the Program Manager or Coordinator or designated staff at least four times a year, and monthly during the deicing season. Routine facility inspections shall include a visual inspection of the following:

- Areas associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Determine if control measures to reduce pollutants are implemented in accordance with the terms of the permit, or whether additional control measures are needed. Structural stormwater management measures, sediment and erosion control measures, post-construction BMPs, and other

structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

- Based on the results of the inspection, the description of potential pollutant sources identified in the plan and pollution prevention measures and controls identified in the plan shall be revised as appropriate within 14 days of such inspection and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 90 days after the inspection.

- A report summarizing the scope of the inspection, personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the stormwater pollution prevention plan, and actions taken in accordance with the permit shall be made a part of the stormwater pollution prevention plan and retained as required. Control measures needing replacement, maintenance or repair shall be documented. The report shall identify any incidents of noncompliance and be certified by a responsible corporate officer.

13.2 Visual Assessment of Stormwater Discharges

On a quarterly basis, the Airport is required to collect a stormwater sample from each outfall and conduct a visual assessment of each sample. The visual assessment must be conducted by qualified personnel as defined in Appendix A Section A.1. of the 2021 MSGP (Appendix A), with at least one member of the Airport's stormwater pollution prevention team participating.

13.2.1 Visual Assessment Procedures

Stormwater discharge samples must be collected within the first 30 minutes of an actual discharge from a storm event. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample must be collected as soon as practicable after the first 30 minutes and the Airport must document why it was not possible to take samples within the first 30 minutes. Stormwater discharge sampling shall not occur within 72 hours (three days) of a previous storm event.

The visual inspection must be made of a sample in a clean, colorless glass or plastic container, and examined in a well-lit area. The sample must be visually inspected for the following water quality characteristics:

- Color;

- Odor;
- Clarity (diminished);
- Floating solids;
- Settled solids;
- Suspended solids;
- Foam;
- Oil sheen; and
- Other obvious indicators of stormwater pollution.

Visual assessments must be conducted quarterly. Monitoring requirements begin in the first full quarter following either May 30, 2021 or the date of discharge authorization, whichever date comes later. According to Section 3.2.4.3 of the MSGP, at least one quarterly visual assessment must capture snowmelt discharge. Quarterly monitoring must be performed at least once in each of the following 3-month intervals during each year of permit coverage:

- January 1 – March 31;
- April 1 - June 30;
- July1 – September 30; and
- October 1 – December 31

13.2.2 Visual Assessment Documentation

The Airport is required to document the results of visual assessments and maintain the documentation on-site with the SWPPP. The Airport is not required to submit documentation of visual assessment findings to EPA, unless specifically requested to do so. Any deviations from the schedule for visual assessments and/or monitoring must be documented, along with the reason for the deviations. A Quarterly Visual Inspection report form (NPDES – 2) is included as Appendix G. At a minimum, documentation of the visual assessment must include:

- Sample location(s);
- Sample collection date and time;

- Visual assessment date and time for each sample;
- Personnel collecting the sample and performing visual assessment, and their signatures;
- Nature of the discharge (i.e., runoff or snowmelt);
- Results of observations of the stormwater discharge;
- Probable sources of any observed stormwater contamination; and
- If applicable, why it was not possible to take samples within the first 30 minutes of stormwater discharge.

13.3 Indicator Monitoring

Beginning the first full quarter of permit coverage, on a bi-annual basis, during the first and fourth years of permit coverage, the Airport is required to collect a stormwater sample from each outfall and conduct indicator monitoring of stormwater discharges for the 16 individual polycyclic aromatic hydrocarbons (PAHs) identified at Appendix A to 40 CFR Part 423. These analytes include the following: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

13.3.1 Indicator Monitoring Procedures

Stormwater discharge samples must be collected within the first 30 minutes of an actual discharge from a storm event. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample must be collected as soon as practicable after the first 30 minutes and the Airport personnel must document why it was not possible to take samples within the first 30 minutes. Stormwater discharge sampling shall not occur within 72 hours (three days) of a previous storm event. Indicator monitoring must be conducted quarterly. Samples must be analyzed using EPA Method 625.1, or EPA Method 610/Standard Method 6440B if preferred by the operator, consistent with 40 CFR Part 136 analytical methods.

Monitoring requirements begin in the first full quarter following either May 30, 2021 or the date of discharge authorization, whichever date comes later. Biannual monitoring must be performed at least once in each of the following intervals during the first and fourth years of permit coverage:

- May 30, 2021 – October 30, 2021;

- November 1, 2021 – April 30 2022;
- July 1, 2024 – November 30, 2024; and
- December 1, 2024 – May 30, 2025.

As stated by Section 4.1.6, when freezing conditions exist that prevent discharges from occurring for extended periods, required monitoring events may be distributed during seasons when precipitation occurs, or when snowmelt results in a measurable discharge. The required number of samples must still be collected.

13.3.2 Indicator Monitoring Reporting

The Airport is required to report the results of indicator monitoring. Any deviations from the schedule for monitoring must be documented, along with the reason for the deviations. As specified in Part 7.4 of the 2021 MSGP, deviations from the monitoring schedule due to freezing conditions must be indicated in Net-DMR.

The Airport is required to report monitoring data using Net-DMR, EPA's electronic DMR tool, as described in Part 7.3 of the 2021 MSGP. An Indicator Monitoring report form (NPDES – 3) is included as Appendix H. At a minimum, the report must include:

- Sample location(s);
- Sample collection date and time;
- Duration (in hours) of rainfall event;
- Rainfall total (in inches) for that rainfall event;
- Time (in days) since the previous measurable storm event;
- Nature of the discharge (i.e., runoff or snowmelt);
- If applicable, why it was not possible to take samples within the first 30 minutes of stormwater discharge.
- If applicable, any deviations to the monitoring schedule due to freezing conditions.

The indicator monitoring parameters are "report-only" and do not have thresholds or baseline values for comparison, therefore no follow-up action is triggered or required under Section 4.2.1 of the 2021 MSGP. In the event that monitoring results are unable

to be electronically reported in Net-DMR, operators must maintain monitoring results and records within the SWPPP.

13.4 Annual Reporting

To maintain compliance with the MSGP, the Airport must submit an Annual Report to EPA electronically by January 30th for each year of permit coverage. The Annual Report must contain the following information generated from the prior calendar year:

- A summary of the prior year's routine facility inspection documentation. The Airport is not subject to the airport effluent limitations guidelines and must certify annually that pavement deicers containing urea are not used at the Airport.

- A summary of the prior year's quarterly visual assessment documentation.

- A summary of the Airport's past year's corrective action documentation (Part 5 of the MSGP). If corrective action is not yet completed at the time of submission of the Annual Report, Airport Management must describe the status of any outstanding corrective action(s). Airport Management must also describe any incidents of noncompliance in the past year or currently ongoing, or if none, provide a statement that the Airport is in compliance with the permit.

- The Annual Report must also include a statement, signed and certified in accordance with Appendix B, Subsection 11 of the 2021 MSGP (Appendix A).

14.0 Documentation to Support Eligibility Considerations Under Other Federal Laws

Along with the SWPPP, the following additional documents will be kept with the SWPPP to demonstrate full compliance with the permit:

- Copy of the NOI submitted to EPA along with any correspondence between the Airport and EPA specific to coverage under the permit;

- Copy of the acknowledgement the Airport receives from the EPA assigning the NPDES ID;

- Copy of the permit;

- Copy of the SPCCP;

- Documentation of maintenance and repairs of control measures, including the date(s) of regular maintenance, date(s) of discovery of areas in need of

repair/replacement, and for repairs, date(s) that the control measure(s) returned to full function, and the justification for any extended maintenance/repair schedules;

- All inspection reports, including the Routine Facility Inspection Reports and Quarterly Visual Assessment Reports;

- Description of any deviations from the schedule for visual assessments and/or monitoring, and the reason for the deviations (e.g., adverse weather or it was impractical to collect samples within the first 30 minutes of a measurable storm event); and

- Corrective action documentation.

15.0 REFERENCES

Horsley Witten Group, Inc. December 2013. Stormwater Pollution Prevention Plan, Barnstable Municipal Airport.

Horsley Witten Group, Inc. December, 2013. Spill Prevention Control and Countermeasures Plan, Barnstable Municipal Airport.

Federal Aviation Administration. FAR 139 Airport Certification Manual, Barnstable Municipal Airport.

Massachusetts Department of Environmental Protection. April, 2014. Massachusetts Contingency Plan: Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup, 310 CMR 40.0000.

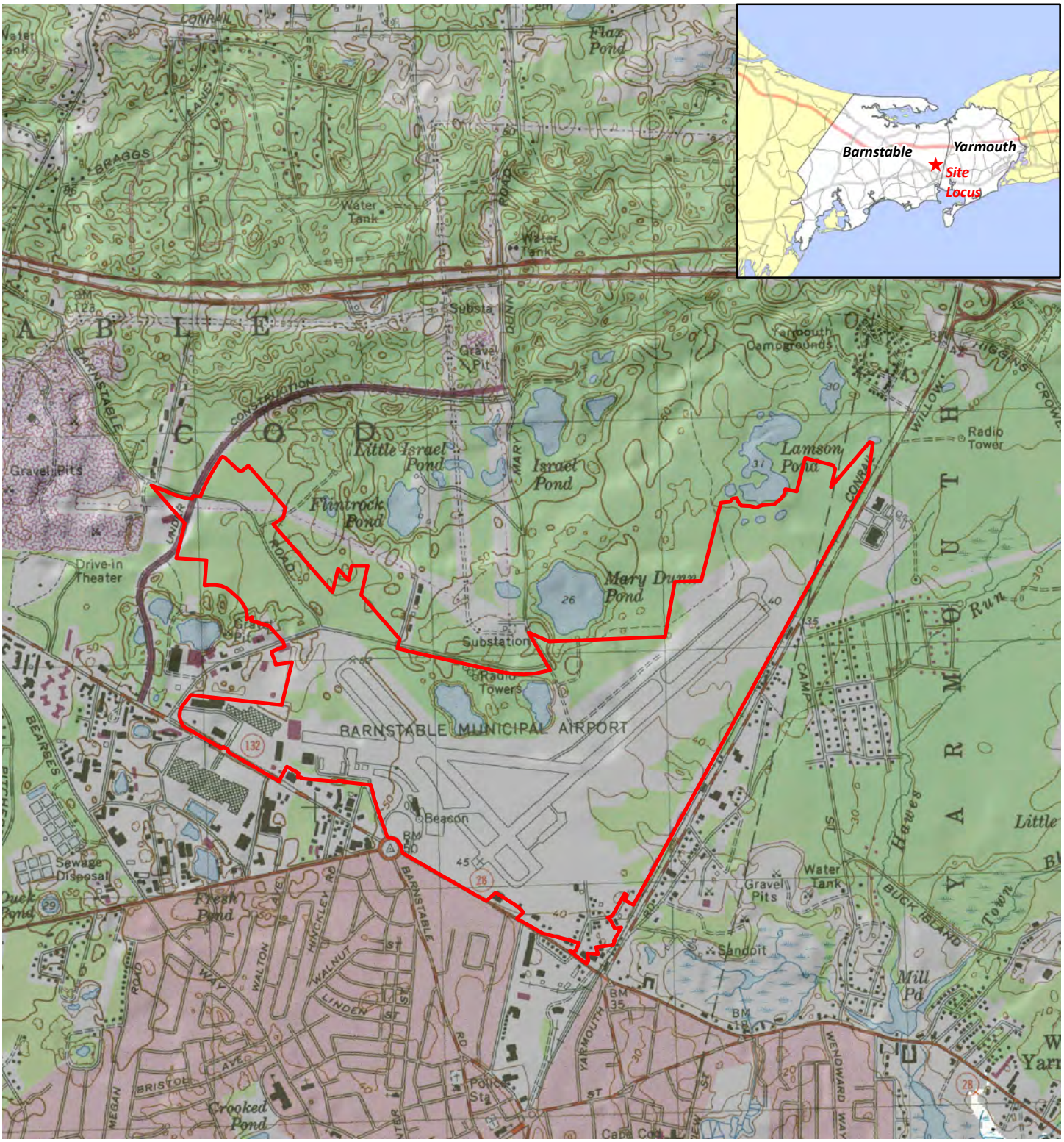
Massachusetts Department of Environmental Protection. Massachusetts General Laws: Massachusetts Oil and Hazardous Material Release Prevention and Response Act, Chapter 21E.

Massachusetts Department of Environmental Protection. 2000. Massachusetts Hazardous Waste Regulations: Massachusetts Department of Environmental Protection, 310 CMR 30.

U.S. Environmental Protection Agency. Code of Federal Regulations 40 CFR 112.

U.S. Environmental Protection Agency. National Pollutant Discharge Elimination System, Multi-Sector General Permit, 2021.

FIGURES



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Legend

*2016 NAIP imagery service

Cape Cod Gateway Airport Property Boundary

N

0 2,000

1" = 2,000 feet

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

USGS Locus
Cape Cod Gateway Airport
Hyannis, MA

Date: 11/18/2019 Figure 1

*Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Legend

Cape Cod Gateway Airport Property Boundary

DEP

- Wooded
- Open
- Shoreline
- Hydrologic Connection
- Wetland
- Closure Line

NHESP Priority Habitats of Rare Species

NHESP Estimated Habitats of Rare Wildlife

N

0 800

1" = 800 feet

Property = 645 acres

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

Site Map
Cape Cod Gateway Airport
Hyannis, MA

Date: 5/26/2021

Figure 2

*Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services *2016 NAIP imagery service

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DRAINAGE AREA A

DRAINAGE AREA E

DRAINAGE AREA F

DRAINAGE AREA G

DRAINAGE AREA O

DRAINAGE AREA N

DRAINAGE AREA C

DRAINAGE AREA B

DRAINAGE AREA D

DRAINAGE AREA M

DRAINAGE AREA H

DRAINAGE AREA I

DRAINAGE AREA J

DRAINAGE AREA K

DRAINAGE AREA L

VORTECHS WATER QUALITY UNIT

VORTECHS WATER QUALITY UNITS

MARY DUNN POND

LEWIS POND

UPPER GATE POND

MAIN TERMINAL APRON

EAST RAMP APRON

RUNWAY 15/33 (5252' X 150')

RUNWAY 6/24 (5425' X 150')

TAXIWAY A

TAXIWAY B

TAXIWAY C

TAXIWAY D

INFILTRATION BASIN

UNDERGROUND RECHARGE STRUCTURES

DISCHARGE CONTROL VALVE

D/WS AND PUMP STATION

LEGEND

RW1533-29 CB: Catchbasin
RW1533-29 LCB: Leaching Catchbasin
RW1533-29 LCB/RD: Leaching Catchbasin / Roof Drain
RW1533-29 LCB/UGDC: Leaching Catchbasin with Underground Discharge Chamber
RW1533-29 LB: Leaching Basin with No Catchment
O/WS: Oil Water Separator
Airport Property Line
BIO: Bioretention Basin
T31 VORTECH: CONTECH Water Quality Structure

NOTE:

All locations of buildings, utilities, and surface features derived from Town of Barnstable, Massachusetts, Geographic Information System. Location and nature of stormwater utilities based upon data provided by Edwards and Kelcey Barnstable Municipal Airport Drainage Plan (07/07), and field inspection of select utilities by Horsley Witten on July 15, 2008.

AIRPORT BUILDINGS/AREAS TABLE

NO.	BUILDING
1	RECTRIX AERODOME CENTER HANGAR
2	CAPE AIR/NANTUCKET AIR HANGAR
3	GRIFFIN AVIONICS
4	GRIFFIN AVIONICS FUEL STATION
5	SPECIALIZED AUTOMOTIVE
6	HANGAR 2 – CAPE AIR / AIRPORT MAINTENANCE
7	GATE F FUEL FARM
8	HANGAR BUILDING (VACANT)
9	ALLIES AIR
10	MAIN TERMINAL BUILDING
11	MAIN TERMINAL GENERATOR
12	AIR TRAFFIC CONTROL TOWER (ATCT)
13	SOUTH RAMP DEICING PAD
14	AIRPORT ARFF/SRE FACILITY
15	RECTRIX/AIR CAPE COD
16	RECTRIX/AIR CAPE COD FUEL FARM
17	AIRPORT LIGHTING VAULT
18	BMA T-HANGAR
19	AMA NANTUCKET INC.
20	CAPEFLIGHT INSTRUCTION
21	HYANNIS HANGAR LLC
22	HEXAGON HANGAR
23	KINGSBURY AVIATION (BUILDING 1)
24	KINGSBURY AVIATION (BUILDING 2)
25	STEAMSHIP AUTH. PARKING LOT
26	HERTZ CAR WASH
27	AVIS CAR WASH
28	BUDGET TRUCK RENTAL

GRAPHIC SCALE

250 0 125 250 500 1000

(IN FEET)

Horsley Witten Group
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Designed By: GWTH
Drawn By: GWTH
Checked By: JEL
Date: 5/26/2021

Plan Title:

SITE PLAN
CAPE COD GATEWAY AIRPORT
HYANNIS, MA

Prepared For:
Cape Cod Gateway Airport
480 Barnstable Road
Hyannis, MA 02601
(508) 775-2020

Revisions

1	12-27-17	ERK	Update to Drainage Plan
2	4-13-18	JEL	Update to Drainage Plan
3	4-27-18	GH	Update to Drainage Plan
4	1-25-19	JEL	Update to Drainage Plan
5	7-29-19	GH	Update to Drainage Plan
6	9-30-19	JEL	SWPPP Figure 3
7	12-26-19	GH	SWPPP Figure 3
8	12-31-19	JEL	SWPPP Figure 3
9	1-16-20	LEN	Update to Drainage Plan

Project Number: 14105

Figure: 3

APPENDIX A

2021 MULTI-SECTOR GENERAL PERMIT (MSGP)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
MULTI-SECTOR GENERAL PERMIT (MSGP)
FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

In compliance with the provisions of the Clean Water Act (CWA), as amended (33 U.S.C. 1251 et seq.), operators of stormwater discharges associated with industrial activity located in an area identified in Appendix C where EPA is the permitting authority are authorized to discharge to waters of the United States in accordance with the eligibility and Notice of Intent (NOI) requirements, effluent limitations, inspection requirements, and other conditions set forth in this permit. This permit is structured as follows:

- **Parts 1-7:** General requirements that apply to all facilities;
- **Part 8:** Industry sector-specific requirements;
- **Part 9:** Specific requirements that apply in individual states and Indian country; and
- **Appendices A through P:** Additional permit conditions that apply to all operators covered under this permit.

This permit becomes effective on **March 1, 2021.** This permit and the authorization to discharge shall expire at 11:59 pm eastern time, **February 28, 2026.**

Signed and issued this 15th day of January 2021

DENNIS DEZIEL
Digitally signed by DENNIS DEZIEL
Date: 2021.01.15 11:27:28 -05'00'

Dennis Deziel,
Regional Administrator, EPA Region 1.

Signed and issued this 15th day of January 2021

CHARLES MAGUIRE
Digitally signed by CHARLES MAGUIRE
DN: c=US, o=U.S. Government, ou=Environmental Protection Agency, cn=CHARLES MAGUIRE, 0.9.2342.19200300.100.1.1=68001003650036
Date: 2021.01.15 12:41:18 -06'00'

Charles Maguire,
Director, Water Division, EPA Region 6.

Signed and issued this 15th day of January 2021

JEFFREY GRATZ
Digitally signed by JEFFREY GRATZ
Date: 2021.01.15 09:35:36 -05'00'

Jeffrey Gratz,
Deputy Director, Water Division, EPA Region 2.

Signed and issued this 15th day of January 2021

JEFFERY ROBICHAUD
Digitally signed by JEFFERY ROBICHAUD
Date: 2021.01.15 13:43:45 -06'00'

Jeffery Robichaud,
Director, Water Division, EPA Region 7.

Signed and issued this 15th day of January 2021

CARMEN GUERRERO PEREZ
Digitally signed by CARMEN GUERRERO PEREZ
Date: 2021.01.15 11:13:39 -04'00'

Carmen R. Guerrero-Perez,
Director, Caribbean Environmental Protection Division, EPA Region 2.

Signed and issued this 15th day of January 2021

DARCY OCONNOR
Digitally signed by DARCY OCONNOR
Date: 2021.01.15 14:22:01 -07'00'

Darcy O'Connor,
Director, Water Division, EPA Region 8.

Signed and issued this 15th day of January 2021

CATHERINE LIBERTZ
Digitally signed by CATHERINE LIBERTZ
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1 How to Obtain Coverage Under the 2021 MSGP

To be covered under this permit, you must meet all of the eligibility conditions and follow the requirements for obtaining permit coverage in Part 1.

1.1 Eligibility Conditions

1.1.1 Location of Your Facility. Your facility must be located in an area where EPA is the permitting authority and where coverage under this permit is available (see Appendix C); [1]

1.1.2 Your Discharges Are Associated with Industrial Activity. Your facility must have an authorized stormwater discharge or an authorized non-stormwater discharge per Part 1.2 associated with industrial activity from your primary industrial activity (as defined in Appendix A and as listed in Appendix D), or you have been notified by EPA that you are eligible for coverage under Sector AD.

1.1.3 Limitations on Coverage. Discharges from your facility are **not**:

1.1.3.1 Discharges mixed with non-stormwater discharges. Discharges mixed with non-stormwater discharges other than those mixed with authorized non-stormwater discharges listed in Part 1.2.2, and/or those mixed with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES authorization.

1.1.3.2 Stormwater discharges associated with construction activity. Stormwater discharges associated with construction activity disturbing one acre or more, or that are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one acre or more, unless in conjunction with mining activities or certain oil and gas extraction activities as specified in Sectors G, H, I, and J of this permit.

1.1.3.3 Discharges already covered by another NPDES permit. Unless you have received written notification from EPA specifically allowing these discharges to be covered under this permit, you are not eligible for coverage under this permit for any of the following:

a. Stormwater discharges associated with industrial activity that are currently covered under an individual NPDES permit or an alternative NPDES general permit;

b. Stormwater discharges covered within five years prior to the effective date of this permit by an individual NPDES permit or alternative NPDES general permit where that permit established site-specific numeric water quality-based effluent limitations developed for the industrial stormwater component of the discharge; or

c. Discharges from facilities where any NPDES permit has been or is in the process of being denied, terminated, or revoked by EPA (this does not apply to the routine expiration and reissuance of NPDES permits every five years).

1.1.3.4 Stormwater Discharges Subject to Effluent Limitations Guidelines. Stormwater discharges subject to stormwater effluent limitation guidelines under 40 CFR, Subchapter N, other than those listed in Table 1-1 of this permit.

[1] This condition also applies in the limited circumstances where your facility is located in a jurisdiction where EPA is not the permitting authority, but your discharge point location is to a water of the United States where EPA is the permitting authority.

1.1.4 **Eligibility Related to Endangered Species Act (ESA) Listed Species and Critical Habitat Protection.** You are able to demonstrate that your stormwater discharges, authorized non-stormwater discharges, and stormwater discharge-related activities are not likely to adversely affect any species that are federally listed as endangered or threatened ("ESA-listed") and are not likely to adversely affect habitat that is designated as "critical habitat" under the Endangered Species Act (ESA), or said discharges and activities were the subject of an ESA Section 7 consultation or an ESA Section 10 permit. You must follow the procedures outlined in the Endangered Species Protection section of the NOI in EPA's NPDES eReporting Tool (NeT-MSGP) and meet one of the criteria listed in Appendix E. You must comply with any measures that formed the basis of your criteria eligibility determination to be in compliance with the MSGP. These measures become permit requirements per Part 2.3. Documentation of these measures must be kept as part of your Stormwater Pollution Prevention Plan (SWPPP) (see Part 6.2.6.1).

1.1.5 **Eligibility related to National Historic Preservation Act (NHPA)-Protected Properties.** You must follow the procedures outlined in the Historic Properties section of the NOI in NeT-MSGP to demonstrate that your stormwater discharges, authorized non-stormwater discharges, and stormwater discharge-related activities meet one of the eligibility criteria in Appendix F.

1.1.6 **Eligibility for "New Dischargers" and "New Sources" (as defined in Appendix A)[2] ONLY**

1.1.6.1 **Eligibility for "New Dischargers" and "New Sources" Based on Water Quality Standards.** Your stormwater discharge must be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards. You are ineligible for coverage under this permit if EPA determines prior to your authorization to discharge that your stormwater discharges will not be controlled as necessary such that the receiving water of the United States will not meet an applicable water quality standard. In such case, EPA may notify you that an individual permit application is necessary per Part 1.3.8, or, alternatively, EPA may authorize your coverage under this permit after you implement additional control measures so that your stormwater discharges will be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards.

1.1.6.2 **Eligibility for "New Dischargers" and "New Sources" for Water-Quality Impaired Waters.** If you discharge to an "impaired water" (as defined in Appendix A), you must do one of the following:

- **a.** Prevent all exposure to stormwater of the pollutant(s) for which the waterbody is impaired, and retain documentation of procedures taken to prevent exposure onsite with your SWPPP;
- **b.** When submitting your NOI in NeT-MSGP, provide the technical information or other documentation to support your claim that the pollutant(s) for which the waterbody

[2] "New Discharger" means a facility from which there is or may be a discharge, that did not commence the discharge of pollutants at a particular site prior to August 13, 1979, which is not a new source, and which has never received a finally effective NPDES permit for discharges at that site. See 40 CFR 122.2.

"New Source" means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced: i) after promulgation of standards of performance under section 306 of the CWA which are applicable to such source, or ii) after proposal of standards of performance in accordance with section 306 of the CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal. See 40 CFR 122.2.

is impaired is not present at your facility, and retain such documentation with your SWPPP; or

c. When submitting your NOI in NeT-MSGP, provide either data or other technical documentation, to support a conclusion that the stormwater discharge will be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards and retain such information with your SWPPP. The information you submit must demonstrate:

i. For discharges to waters without an EPA-approved or established total maximum daily load (TMDL), that the discharge of the pollutant for which the water is impaired will be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards at the point of discharge to the waterbody; or

ii. For discharges to waters with an applicable EPA-approved or established TMDL, that there are, in accordance with 40 CFR 122.4(i), sufficient remaining wasteload allocations in the TMDL to allow your discharge and that existing dischargers to the waterbody are subject to compliance schedules designed to bring the waterbody into attainment with water quality standards (e.g., a reserve allocation for future growth).

You are eligible under Part 1.1.6.2.c if you receive a determination from the applicable EPA Regional Office that your stormwater discharge will be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards and you document the Region's determination in your SWPPP. If the applicable EPA Regional Office fails to respond to you within 30 days after submission of data, you are considered eligible for coverage.

1.1.6.3 Eligibility for "New Dischargers" and "New Sources" for Waters with High Water Quality (Tier 2, 2.5, and 3).

a. For new dischargers and new sources to Tier 2 or Tier 2.5 waters, your discharge must not lower the water quality of the applicable water. See a list of Tier 2 and Tier 2.5 waters in Appendix L.

b. For new dischargers and new sources to waters designed by a state or tribe as Tier 3 waters[3] (i.e., outstanding national resource waters) for antidegradation purposes under 40 CFR 131.13(a)(3), you are not eligible under this permit and you must apply for an individual permit. See a list of Tier 3 waters in Appendix L.

1.1.7 Eligibility for Discharges to a Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Site. If you discharge to a federal CERCLA Site listed in Appendix P, you must notify the EPA Region 10 Office when submitting your NOI, and the EPA Region 10 Office must determine that you are eligible for permit coverage. In determining eligibility for coverage under this Part, the EPA Region 10 Office may evaluate whether you are implementing or plan to implement adequate controls and/or procedures to ensure that your discharge will not lead to

[3] For the purposes of this permit, your project is considered to discharge to a Tier 2, Tier 2.5, or Tier 3 water if the first water of the United States to which you discharge is identified by a state, tribe, or EPA as a Tier 2, Tier 2.5, or Tier 3 water. For discharges that enter a separate storm sewer system prior to discharge, the first water of the United States to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system (separate storm sewer systems (MS4s and non-municipal storm sewers systems) do not include combined sewer systems or separate sanitary sewer systems).

recontamination of aquatic media at the CERCLA Site (i.e., your stormwater discharge will be controlled as necessary such that the receiving water of the United States will meet an applicable water quality standard). If it is determined that your facility discharges to a CERCLA Site listed in Appendix P after you have obtained coverage under this permit, you must contact the EPA Region 10 Office and ensure that you either have implemented or will implement adequate controls and/or procedures to ensure that your discharges will not lead to recontamination of aquatic media at the CERCLA Site such that your stormwater discharge will be controlled as necessary such that the receiving water of the United States will meet an applicable water quality standard.

For the purposes of this permit, a facility discharges to a federal CERCLA Site if the discharge flows directly into the site through its own conveyance, or through a conveyance owned by others, such as a municipal separate storm sewer system (MS4).

1.2 Types of Discharges Authorized Under the MSGP[4]

1.2.1 Authorized Stormwater Discharges. If you meet all the eligibility criteria in Part 1.1, then the following discharges from your facility are authorized under this permit:

1.2.1.1 Stormwater discharges associated with industrial activity for any primary industrial activities and co-located industrial activities (as defined in Appendix A) except for any stormwater discharges prohibited in Part 8;

1.2.1.2 Discharges EPA has designated as needing a stormwater permit as provided in Sector AD;

1.2.1.3 Discharges that are not otherwise required to obtain NPDES permit authorization but are mixed with discharges that are authorized under this permit; and

1.2.1.4 Stormwater discharges from facilities subject to any of the national stormwater-specific effluent limitations guidelines listed in Table 1-1.

Table 1-1. Stormwater-Specific Effluent Limitations Guidelines

Regulated Discharge	40 CFR Section	MSGP Sector	New Source Performance Standard (NSPS)	New Source Date
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas	Part 429, Subpart I	A	Yes	1/26/81
Runoff from phosphate fertilizer manufacturing facilities that comes into contact with any raw materials, finished product, by-products or waste products (SIC 2874)	Part 418, Subpart A	C	Yes	4/8/74
Runoff from asphalt emulsion facilities	Part 443, Subpart A	D	Yes	7/28/75
Runoff from material storage piles at cement manufacturing facilities	Part 411, Subpart C	E	Yes	2/20/74

[4] Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under Clean Water Act (CWA) section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), or during an inspection.

Regulated Discharge	40 CFR Section	MSGP Sector	New Source Performance Standard (NSPS)	New Source Date
Mine dewatering discharges at crushed stone, construction sand and gravel, or industrial sand mining facilities	Part 436, Subparts B, C, and D	J	No	N/A
Runoff from hazardous waste and non-hazardous waste landfills	Part 445, Subparts A and B	K, L	Yes	2/2/00
Runoff from coal storage piles at steam electric generating facilities	Part 423	O	Yes	11/19/82 (10/8/74)[1]
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Part 449	S	Yes	6/15/1

[1] NSPS promulgated in 1974 were not removed via the 1982 regulation; therefore, wastewaters generated by 40 CFR Part 423-applicable sources that were New Sources under the 1974 regulations are subject to the 1974 NSPS.

1.2.2 **Authorized Non-Stormwater Discharges.** Below is the list of non-stormwater discharges authorized under this permit. Unless specifically listed in this Part, this permit does not authorize any other non-stormwater discharges requiring NPDES permit coverage and you must either eliminate those discharges or they must be covered under another NPDES permit; this includes the sector-specific non-stormwater discharges that are listed in Part 8 as prohibited (a non-exclusive list is provided only to raise awareness of contaminants or sources of contaminants generally characteristic of certain sectors).

1.2.2.1 **Authorized Non-Stormwater Discharges for All Sectors.** The following are the only non-stormwater discharges authorized under this permit for all sectors provided that all discharges comply with the effluent limits set forth in Parts 2 and 8.

a. Discharges from emergency/unplanned fire-fighting activities;

b. Fire hydrant flushings;

c. Potable water, including uncontaminated water line flushings;

d. Uncontaminated condensate from air conditioners, coolers/chillers, and other compressors and from the outside storage of refrigerated gases or liquids;

e. Irrigation/landscape drainage, provided all pesticides, herbicides, and fertilizers have been applied in accordance with the approved labeling;

f. Pavement wash waters, provided that detergents or hazardous cleaning products are not used (e.g., bleach, hydrofluoric acid, muriatic acid, sodium hydroxide, nonylphenols), and the wash waters do not come into contact with oil and grease deposits, sources of pollutants associated with industrial activities (see Part 6.2.3), or any other toxic or hazardous materials, unless residues are first cleaned up using dry clean-up methods (e.g., applying absorbent materials and sweeping, using hydrophobic mops/rags) and you have implemented appropriate control measures to minimize discharges of mobilized solids and other pollutants (e.g., filtration, detention, settlement);

g. External building/structure washdown / power wash water that does not use detergents or hazardous cleaning products (e.g., those containing bleach,

hydrofluoric acid, muriatic acid, sodium hydroxide, nonylphenols) and you have implemented appropriate control measures to minimize discharges of mobilized solids and other pollutants (e.g., filtration, detention, settlement);

h. Uncontaminated ground water or spring water;

i. Foundation or footing drains where flows are not contaminated with process materials;

j. Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of your facility, but not intentional discharges from the cooling tower (e.g., "piped" cooling tower blowdown; drains); and

k. Any authorized non-stormwater discharge listed above in this Part 1.2.2 or any stormwater discharge listed in Part 1.2.1 mixed with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES permit authorization.

1.2.2.2 Additional Authorized Non-Stormwater Discharge for Sector A Facilities. Discharges from the spray down of lumber and wood product storage yards where no chemical additives are used in the spray-down waters and no chemicals are applied to the wood during storage, provided the non-stormwater component of the discharge is in compliance with the non-numeric effluent limits requirements in Part 2.1.2.

1.2.2.3 Additional Authorized Non-Stormwater Discharges for Earth-Disturbing Activities Conducted Prior to Active Mining Activities for Sectors G, H and J Facilities. The following non-stormwater discharges are only authorized for earth-disturbing activities conducted prior to active mining activities, as defined in Part 8.G.3.2, 8.H.3.2, and 8.J.3.2, provided that, with the exception of water used to control dust, these discharges are not routed to areas of exposed soil and all discharges comply with the permit's effluent limits. Once the earth-disturbing activities conducted prior to active mining activities have ceased, the only authorized non-stormwater discharges for Sectors G, H, and J are those listed here in Part 1.2.2.3:

a. Water used to wash vehicles and equipment, provided that there is no discharge of soaps, solvents, or detergents used for such purposes;

b. Water used to control dust; and

c. Dewatering water that has been treated by an appropriate control under Parts 8.G.4.2.9, 8.H.4.2.9, or 8.J.4.2.9.

1.3 Obtaining Authorization to Discharge

1.3.1 Prepare Your Stormwater Pollution Prevention Plan (SWPPP) Prior to Submitting Your Notice of Intent (NOI). You must develop a SWPPP or update your existing SWPPP per Part 6 prior to submitting your NOI for coverage under this permit, per Part 1.3.2 below. You must make your SWPPP publicly available by either attaching it to your NOI, including a URL in your NOI, or providing additional information from your SWPPP on your NOI, per Part 6.4.

1.3.2 How to Submit Your NOI to Get Permit Coverage. To be covered under this permit, you must use EPA's NPDES eReporting Tool for the MSGP (NeT-MSGP) to electronically prepare and submit to EPA a complete and accurate NOI by the deadline applicable to your facility presented in Table 1-2. The NOI certifies to EPA that you are eligible for coverage according to Part 1.1 and provides information on your industrial activities

and related discharges. Per Part 7.1, you must submit your NOI electronically via NeT-MSGP, unless the applicable EPA Regional Office grants you a waiver from electronic reporting, in which case you may use the paper NOI form in Appendix G. To access NeT-MSGP, go to https://www.epa.gov/npdes/stormwater-discharges-industrial-activities#accessingmsgp

1.3.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage. Table 1-2 provides the deadlines for submitting your NOI and your official start date of permit coverage.

Table 1-2. NOI Submittal Deadlines and Discharge Authorization Dates

Category of Facility/Operator	NOI Submission Deadline	Discharge Authorization Date[1, 2]
Existing MSGP facility. Operators of industrial activities whose stormwater discharges were covered under the 2015 MSGP.	No later than May 30, 2021.	30 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization has been denied or delayed. Note: You must review and update your SWPPP to ensure that this permit's requirements are addressed prior to submitting your NOI. Provided you submit your NOI in accordance with the deadline, your authorization under the 2015 MSGP is automatically continued until you have been granted coverage under this permit or an alternative permit, or coverage is otherwise terminated.
Operator operating consistent with EPA's No Action Assurance and submitted an Intent to Operate (ITO) form. Operators of industrial activities who commenced discharging between June 4, 2020 and March 1, 2021 and have been operating consistent with EPA's June 3, 2020 'No Action Assurance for the NPDES Stormwater Multi-Sector General Permit for Industrial Activities.'	As soon as possible, but see the June 3, 2020 'No Action Assurance for the NPDES Stormwater Multi-Sector General Permit for Industrial Activities' (and any updates to that document) for additional guidance on deadlines.	30 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization has been denied or delayed.
New facility without MSGP coverage. Operators of industrial activities that will commence discharging after March 1, 2021.	At least 30 calendar days prior to commencing discharge.	30 calendar days after EPA notifies you that it has received a complete NOI, unless EPA notifies you that your authorization has been denied or delayed.
Existing facility covered under an alternative permit. Operators seeking coverage for stormwater discharges previously covered under an individual permit or an alternative general permit.	At least 30 calendar days prior to commencing discharge.	

Category of Facility/Operator	NOI Submission Deadline	Discharge Authorization Date[1, 2]
Existing MSGP facility with a new operator. New operators of existing industrial activities with stormwater discharges previously authorized under the 2021 MSGP.	At least 30 calendar days prior to the date of transfer of control to the new operator.	
Existing facility without MSGP coverage. Operators of industrial activities that commenced discharging prior to March 1, 2021, but whose stormwater discharges were not covered under the 2015 MSGP or another NPDES permit and have not been operating consistent with EPA's No Action Assurance for EPA's NPDES MSGP.	Immediately; your stormwater discharges are currently unpermitted.[1]	

[1] If you have missed the deadline to submit your NOI, any and all discharges from your industrial activities will continue to be unauthorized under the CWA until they are covered by this or a different NPDES permit. EPA may take enforcement action for any unpermitted discharges that occur between the commencement of discharging and discharge authorization.

[2] Discharges are not authorized if your NOI is incomplete or inaccurate or if you are ineligible for permit coverage.

1.3.4 **Modifying your NOI.** If after submitting your NOI, you need to correct or update any fields, you may do so by submitting a "Change NOI" form using NeT-MSGP. Per Part 7.1, you must submit your Change NOI electronically via NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you may use the suggested format for the paper Change NOI form.

1.3.4.1 For an existing operator, if any of the information supplied on the NOI changes, you must submit a Change NOI form within thirty (30) calendar days after the change occurs.

1.3.4.2 At a facility where there is a transfer in operator or a new operator takes over operational control at an existing facility, the new operator must submit a new NOI no later than thirty (30) calendar days after a change in operators. The previous operator must submit a Notice of Termination (NOT) no later than thirty (30) calendar days after MSGP coverage becomes active for the new operator, as specified in Part 1.4.

1.3.5 **Requirement to Post a Sign of your Permit Coverage.** You must post a sign or other notice of your permit coverage at a safe, publicly accessible location in close proximity to your facility. Public signage is not required where other laws or local ordinances prohibit such signage, in which case you must document in your SWPPP a brief explanation for why you cannot post a sign and a reference to the law or ordinance. You must use a font large enough to be readily viewed from a public right-of-way and perform periodic maintenance of the sign to ensure that it remains legible, visible, and factually correct. At minimum, the sign must include:

1.3.5.1 The following statement: "[*Name of facility*] is permitted for industrial stormwater discharges under the U.S. EPA's Multi-Sector General Permit (MSGP)";

1.3.5.2 Your NPDES ID number;

1.3.5.3 A contact phone number for obtaining additional facility information;

1.3.5.4 **One** of the following:

a. The Uniform Resource Locator (URL) for the SWPPP (if available), and the following statement: "To report observed indicators of stormwater pollution, contact [*optional: include facility point of contact and*] EPA at: [*include the applicable MSGP Regional Office contact information found at https://www.epa.gov/npdes/contact-us-stormwater#regional*]; **or**

b. The following statement: "To obtain the Stormwater Pollution Prevention Plan (SWPPP) for this facility or to report observed indicators of stormwater pollution, contact [*optional: include facility point of contact and*] EPA at [*include the applicable MSGP Regional Office contact information found at https://www.epa.gov/npdes/contact-us-stormwater#regional*]."

1.3.6 **Your Official End Date of Permit Coverage.** Once covered under this permit, your coverage will last until the date that:

1.3.6.1 You terminate permit coverage by submitting a Notice of Termination (NOT) per Part 1.4; or

1.3.6.2 You receive coverage under a different NPDES permit or a reissued or replacement version of this permit after it expires on February 28, 2026; or

1.3.6.3 You fail to submit an NOI for coverage under a reissued or replacement version of this permit before the required deadline.

1.3.7 **Continuation of Coverage for Existing Operators After the Permit Expires**

1.3.7.1 Note that if the 2021 MSGP is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with section 558(c) of the Administrative Procedure Act (see 40 CFR 122.6) and remain in force and effect for operators that were covered prior to its expiration. All operators authorized to discharge prior to the expiration date of the 2021 MSGP will automatically remain covered under the 2021 MSGP until the earliest of:

a. The date the operator is authorized for coverage under a new version of the MSGP following the timely submittal of a complete and accurate NOI. Note that if a timely NOI for coverage under the reissued or replacement permit is not submitted, coverage will terminate on the date that the NOI was due; or

b. The date of the submittal of a Notice of Termination; or

c. Issuance of an individual permit for the facility's discharge(s); or

d. A final permit decision by EPA not to reissue the MSGP, at which time EPA will identify a reasonable time period for covered operators to seek coverage under an alternative general permit or an individual permit. Coverage under the 2021 MSGP will terminate at the end of this time period.

1.3.7.2 EPA reserves the right to modify or revoke and reissue the 2021 MSGP under 40 CFR 122.62 and 63, in which case operators will be notified of any relevant changes or procedures to which they may be subject. If EPA fails to issue another general permit prior to the expiration of a previous one, EPA does not have the authority to provide coverage to industrial operators not already covered under that prior general permit. If the five-year expiration date for the 2021 MSGP has passed and a new MSGP has not

been reissued, new operators seeking discharge authorization should contact EPA regarding the options available, such as applying for individual permit coverage.

1.3.8 **Coverage Under Alternative Permits.** EPA may require you to apply for and/or obtain authorization to discharge under an alternative permit, i.e., either an individual NPDES permit or an alternative NPDES general permit, in accordance with 40 CFR 122.64 and 124.5. If EPA requires you to apply for an alternative permit, the Agency will notify you in writing that a permit application or NOI is required. This notification will include a brief statement of the reasons for this decision and will contain alternative permit application or NOI requirements, including deadlines for completing your application or NOI.

1.3.8.1 **Denial of Coverage for New or Previously Unpermitted Facilities.** For new or previously unpermitted facilities, following the submittal of your NOI, you may be denied coverage under this permit and must apply for and/or obtain authorization to discharge under an alternative permit.

1.3.8.2 **Loss of Authorization Under the 2021 MSGP for Existing Permitted Facilities.** If your stormwater discharges are covered under this permit, you may receive a written notification that you must either apply for coverage under an individual NPDES permit or submit an NOI for coverage under an alternative general NPDES permit. In addition to the reasons for the decision and alternative permit application or NOI deadlines, the notice will include a statement that on the effective date of your alternative permit coverage, your coverage under the 2021 MSGP will terminate. EPA will terminate your MSGP permit coverage in NeT-MSGP at that time. EPA may grant additional time to submit the application or NOI if you request it. If you fail to submit an alternative permit application or NOI as required by EPA, then your authorization to discharge under the 2021 MSGP is terminated at the end of the day EPA required you to submit your alternative permit application or NOI. EPA may take appropriate enforcement action for any unpermitted discharge.

1.3.8.3 **Operators Requesting Coverage Under an Alternative Permit.** You may request to be covered under an individual permit. In such a case, you must submit an individual permit application in accordance with the requirements of 40 CFR 122.28(b)(3)(iii), with reasons supporting the request, to the applicable EPA Regional Office listed in Part 7.8 of this permit. The request may be granted by issuance of an individual permit if your reasons are adequate to support the request. When you are authorized to discharge under an alternative permit, your authorization to discharge under the 2021 MSGP is terminated on the effective date of the alternative permit.

1.4 Terminating Permit Coverage

1.4.1 **How to Submit your Notice of Termination (NOT) to Terminate Permit Coverage.** To terminate permit coverage, you must use EPA's NPDES eReporting Tool for the MSGP (NeT-MSGP) to electronically prepare and submit to EPA a complete and accurate NOT. Per Part 7.1, you must submit your NOT electronically via NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you may use the paper NOT form in Appendix H. To access NeT-MSGP, go to https://www.epa.gov/npdes/stormwater-discharges-industrial-activities#accessingmsgp

Your authorization to discharge under this permit terminates at midnight of the day that you are notified that your complete NOT has been processed. If you submit a NOT without meeting one or more of the conditions in Part 1.4.2 then your NOT is not valid.

Until you terminate permit coverage, you must comply with all conditions and effluent limitations in the permit.

1.4.2 **When to Submit Your Notice of Termination.** You must submit a NOT within 30 days after one or more of the following conditions have been met:

1.4.2.1 A new owner or operator has received authorization to discharge under this permit; or

1.4.2.2 You have ceased operations at the facility and/or there are not or no longer will be discharges of stormwater associated with industrial activity from the facility, and you have already implemented necessary sediment and erosion controls per Part 2.1.2.5; or

1.4.2.3 You are a Sector G, H, or J facility and you have met the applicable termination requirements; or

1.4.2.4 You obtained coverage under an individual or alternative general permit for all discharges required to be covered by an NPDES permit, unless EPA terminates your coverage for you per Part 1.3.8.

1.5 Conditional Exclusion for No Exposure

If you are covered by this permit and become eligible for a "no exposure" exclusion from permitting under 40 CFR 122.26(g), you may file a No Exposure Certification (NEC). You are no longer required to have a permit upon submission of a complete and accurate NEC to EPA. If you are no longer required to have permit coverage because of a no exposure exclusion and have submitted a NEC form to EPA, you are not required to submit a NOT. You must submit a NEC form to EPA once every five years.

You must use EPA's NPDES eReporting Tool for the MSGP (NeT-MSGP) to electronically prepare and submit to EPA a complete and accurate NEC. Per Part 7.1, you must submit your NEC electronically via NeT-MSGP, unless the applicable EPA Regional Office grants you a waiver from electronic reporting, in which case you may use the paper NEC form in Appendix K. To access NeT-MSGP, go to https://cdxnodengn.epa.gov/net-msgp/action/login

1.6 Permit Compliance

Any noncompliance with any of the requirements of this permit constitutes a violation of this permit, and thus is a violation of the CWA. As detailed in Part 5, failure to take any required corrective actions constitutes an independent, additional violation of this permit, in addition to any original violation that triggered the need for a corrective action. As such, any actions and time periods specified for remedying noncompliance do not absolve you of the initial underlying noncompliance.

Where an Additional Implementation Measure (AIM) is triggered by an event that does not itself constitute permit noncompliance (i.e., an exceedance of an applicable benchmark), there is no permit violation provided you comply with the required responses within the relevant deadlines established in Part 5.

1.7 Severability

Invalidation of a portion of this permit does not necessarily render the whole permit invalid. EPA's intent is that the permit is to remain in effect to the extent possible; in the

event that any part of this permit is invalidated, EPA will advise the regulated community as to the effect of such invalidation.

2. Control Measures and Effluent Limits

In the technology-based limits included in Parts 2.1 and 8, the term "minimize" means to reduce and/or eliminate to the extent achievable using stormwater control measures (SCMs) (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practice. The term "infeasible" means not technologically possible or not economically practicable and achievable in light of best industry practices. EPA notes that it does not intend for any permit requirement to conflict with state water rights law.

2.1 Stormwater Control Measures

You must select, design, install, and implement stormwater control measures (including best management practices) to minimize pollutant discharges that address the selection and design considerations in Part 2.1.1, meet the non-numeric effluent limits in Part 2.1.2, meet limits contained in applicable effluent limitations guidelines in Part 2.1.3, and meet the water quality-based effluent limitations in Part 2.2.

The selection, design, installation, and implementation of control measures to comply with Part 2 must be in accordance with good engineering practices and manufacturer's specifications. Note that you may deviate from such manufacturer's specifications where you provide justification for such deviation and include documentation of your rationale in the part of your SWPPP that describes your control measures, consistent with Part 6.2.4. You must modify your stormwater control measures per Part 5.1 if you find that your control measures are not achieving their intended effect of minimizing pollutant discharges (i.e., your discharges will be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards or meet any of the other non-numeric effluent limits in this permit). Regulated stormwater discharges from your facility include stormwater run-on that commingles with stormwater discharges associated with industrial activity at your facility.

2.1.1 Stormwater Control Measure Selection and Design Considerations. You must consider the following when selecting and designing control measures:

2.1.1.1 Preventing stormwater from coming into contact with polluting materials is generally more effective, and less costly, than trying to remove pollutants from stormwater;

2.1.1.2 Using stormwater control measures in combination may be more effective than using control measures in isolation for minimizing pollutants in your stormwater discharge;

2.1.1.3 Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective stormwater control measures that will achieve the limits in this permit;

2.1.1.4 Minimizing impervious areas at your facility and infiltrating stormwater onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) can reduce the frequency and volume of discharges and improve ground water recharge and stream base flows in local streams, although care must be taken to avoid ground water contamination;

2.1.1.5 Attenuating flow using open vegetated swales and natural depressions can reduce in-stream impacts of erosive flows;

2.1.1.6 Conserving and/or restoring riparian buffers will help protect streams from stormwater discharges and improve water quality;

2.1.1.7 Using treatment interceptors (e.g., swirl separators and sand filters) may be appropriate in some instances to minimize the discharge of pollutants; and

2.1.1.8 Implementing structural improvements, enhanced/resilient pollution prevention measures, and other mitigation measures can help to minimize impacts from stormwater discharges from major storm events such as hurricanes, storm surge, extreme/heavy precipitation,[5] and flood events. If such stormwater control measures are already in place due to existing requirements mandated by other state, local or federal agencies, you should document in your SWPPP a brief description of the controls and a reference to the existing requirement(s). If your facility may be exposed to or has previously experienced such major storm events,[6] additional stormwater control measures that may be considered include, but are not limited to:

a. Reinforce materials storage structures to withstand flooding and additional exertion of force;

b. Prevent floating of semi-stationary structures by elevating to the Base Flood Elevation (BFE)[7] level or securing with non-corrosive device;

c. When a delivery of exposed materials is expected, and a storm is anticipated within 48 hours, delay delivery until after the storm or store materials as appropriate (refer to emergency procedures);

d. Temporarily store materials and waste above the BFE level;

e. Temporarily reduce or eliminate outdoor storage;

f. Temporarily relocate any mobile vehicles and equipment to higher ground;

g. Develop scenario-based emergency procedures for major storms that are complementary to regular stormwater pollution prevention planning and identify emergency contacts for staff and contractors; and

[5] Heavy precipitation refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal. What constitutes a period of heavy precipitation varies according to location and season. Heavy precipitation does not necessarily mean the total amount of precipitation at a location has increased—just that precipitation is occurring in more intense or more frequent events.

[6] To determine if your facility is susceptible to an increased frequency of major storm events that could impact the discharge of pollutants in stormwater, you may reference FEMA, NOAA, or USGS flood map products at https://www.usgs.gov/faqs/where-can-i-find-flood-maps?qt-news_science_products=0#qt-news_science_products.

[7] Base Flood Elevation (BFE) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1–A30, AR, AR/A, AR/AE, AR/A1– A30, AR/AH, AR/AO, V1–V30 and VE. (Source: https://www.fema.gov/node/404233). The FEMA Flood Map Service Center can be accessed through https://msc.fema.gov/portal/search.

h. Conduct staff training for implementing your emergency procedures at regular intervals.

Note: Part 2.1.1 requires that you must consider Parts 2.1.1.1 through 2.1.1.8 when selecting and designing control measures to minimize pollutant discharges via stormwater. Part 2.1.1 does not require nor prescribe specific control measure to be implemented; however, you must document in your SWPPP per Part 6.2.4 the considerations made to select and design control measures at your facility to minimize pollutants discharged via stormwater.

2.1.2 **Non-Numeric Technology-Based Effluent Limits (BPT/BAT/BCT).**[8] You must comply with the following non-numeric effluent limits as well as any sector-specific non-numeric effluent limits in Part 8, except where otherwise specified.

Effluent limit requirements in Part 2.1.2 that do not involve the site-specific selection of a control measure or are specific activity requirements (e.g., "Cleaning catch basins when the depth of debris reaches two-thirds (2/3) of the sump depth, in line with manufacturer specifications, whichever is lower, and keeping the debris surface at least six inches below the lowest outlet pipe") are marked with an asterisk (*). When documenting in your SWPPP, per Part 6, how you will comply with the requirements marked with an asterisk, you have the option of including additional information or you may just "copy-and-paste" those effluent limits word-for-word from the permit into your SWPPP without providing additional documentation (see Part 6.2.4).

2.1.2.1 **Minimize Exposure.** You must minimize the exposure of manufacturing, processing, and material storage areas (including loading and unloading, storage, disposal, cleaning, maintenance, and fueling operations) to rain, snow, snowmelt, and stormwater in order to minimize pollutant discharges by either locating these industrial materials and activities inside or protecting them with storm resistant coverings. Unless infeasible, you must also:

a. Use grading, berming or curbing to prevent discharges of contaminated flows and divert run-on away from these areas;

b. Locate materials, equipment, and activities so that potential leaks and spills are contained or able to be contained or diverted before discharge;

c. Store leaky vehicles and equipment indoors;

d. Perform all vehicle and/or equipment cleaning operations indoors, under cover, or in bermed areas that prevent discharges and run-on and also that capture any overspray; and

e. Drain fluids from equipment and vehicles that will be decommissioned, and, for any equipment and vehicles that will remain unused for extended periods of time, inspect at least monthly for leaks.

[8] BPT is Best Practicable Control Technology Currently Available, as set forth in CWA section 304(b)(1) and Appendix A; BAT is Best Available Technology Economically Achievable, as set forth in CWA section 304(b)(2) and Appendix A; and BCT is Best Conventional Pollutant Control Technology, as set forth in CWA section 304(b)(4) and Appendix A.

Note: Industrial materials do not need to be enclosed or covered if stormwater from affected areas does not discharge pollutants to waters of the United States or if discharges are authorized under another NPDES permit.

2.1.2.2 **Good Housekeeping.** You must keep clean all exposed areas that are potential sources of pollutants. You must perform good housekeeping measures in order to minimize pollutant discharges, including but not limited to, the following:

a. Sweep or vacuum at regular intervals or, alternatively, wash down the area and collect and/or treat, and properly dispose of the washdown water;

b. Store materials in appropriate containers;

c. Keep all dumpster lids closed when not in use. For dumpsters and roll off boxes that do not have lids and could leak, ensure that discharges have a control (e.g., secondary containment, treatment). Consistent with Part 1.2.2 above, this permit does not authorize dry weather discharges from dumpsters or roll off boxes;*

d. Minimize the potential for waste, garbage and floatable debris to be discharged by keeping exposed areas free of such materials, or by intercepting them before they are discharged.

e. Plastic Materials Requirements: Facilities that handle pre-production plastic must implement control measures to eliminate discharges of plastic in stormwater.[9] Examples of plastic material required to be addressed as stormwater pollutants include plastic resin pellets, powders, flakes, additives, regrind, scrap, waste and recycling.

2.1.2.3 **Maintenance.**

a. **Maintenance Activities.** You must maintain all control measures that are used to achieve the effluent limits in this permit in effective operating condition, as well as all industrial equipment and systems, in order to minimize pollutant discharges. This includes:

ii. Performing inspections and preventive maintenance of stormwater drainage, source controls, treatment systems, and plant equipment and systems that could fail and result in discharges of pollutants via stormwater.

iii. Maintaining non-structural control measures (e.g., keep spill response supplies available, personnel appropriately trained).

iv. Inspecting and maintaining baghouses at least quarterly to prevent the escape of dust from the system and immediately removing any accumulated dust at the base of the exterior baghouse.*

[9] Examples of appropriate control measures include but are not limited to: installing a containment system, or other control, at each on-site storm drain discharge point down gradient of areas containing plastic material, designed to trap all particles retained by a 1 mm mesh screen; using a durable sealed container designed not to rupture under typical loading and unloading activities at all points of plastic transfer and storage; using capture devices as a form of secondary containment during transfers, loading, or unloading plastic materials, such as catch pans, tarps, berms or any other device that collects errant material; having a vacuum or vacuum-type system for quick cleanup of fugitive plastic material available for employees; for facilities that maintain outdoor storage of plastic materials, do so in a durable, permanent structure that prevents exposure to precipitation that could cause the material to be discharged via stormwater.

v. Cleaning catch basins when the depth of debris reaches two-thirds (2/3) of the sump depth, or in line with manufacturer specifications, whichever is lower, and keeping the debris surface at least six inches below the lowest outlet pipe.*

b. **Maintenance Deadlines**.

ii. If you find that your control measures need routine maintenance, you must conduct the necessary maintenance immediately in order to minimize pollutant discharges.

iii. If you find that your control measures need to be repaired or replaced, you must immediately take all reasonable steps to prevent or minimize the discharge of pollutants until the final repair or replacement is implemented, including cleaning up any contaminated surfaces so that the material will not be discharged during subsequent storm events. Final repairs/replacement of stormwater controls should be completed as soon as feasible but must be no later than the timeframe established in Part 5.1.3 for corrective actions, i.e., within 14 days or, if that is infeasible, within 45 days. If the completion of stormwater control repairs/replacement will exceed the 45 day timeframe, you may take the minimum additional time necessary to complete the maintenance, provided that you notify the EPA Regional Office of your intention to exceed 45 days, and document in your SWPPP your rationale for your modified maintenance timeframe. If a control measure was never installed, was installed incorrectly or not in accordance with Parts 2 and/or 8, or is not being properly operated or maintained, you must conduct corrective action as specified in Part 5.1.

Note: In this context, the term "immediately" means the day you identify that a control measure needs to be maintained, repaired, or replaced, you must take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a permanent solution. However, if you identify a problem too late in the work day to initiate action, you must perform the action the following work day morning. "All reasonable steps" means you must respond to the conditions triggering the action, such as, cleaning up any exposed materials that may be discharged in a storm event (e.g., through sweeping, vacuuming) or making arrangements (i.e., scheduling) for a new SCM to be installed.

2.1.2.4 **Spill Prevention and Response.** You must minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans for effective response to such spills if or when they occur in order to minimize pollutant discharges. You must conduct spill prevention and response measures, including but not limited to, the following:

a. Clean up spills and leaks promptly using dry methods (e.g., absorbents) to prevent the discharge of pollutants;

b. Use drip pans and absorbents if leaky vehicles and/or equipment are stored outdoors;

c. Use spill/overflow protection equipment;

d. Plainly label containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides") that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;*

e. Implement procedures for material storage and handling, including the use of secondary containment and barriers between material storage and traffic areas, or a similarly effective means designed to prevent the discharge of pollutants from these areas;

f. Develop training on the procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. As appropriate, execute such procedures as soon as possible;

g. Keep spill kits onsite, located near areas where spills may occur or where a rapid response can be made; and

h. Notify appropriate facility personnel when a leak, spill, or other release occurs.

Where a leak, spill or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period, you must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC, metropolitan area, call (202) 267-2675 in accordance with the requirements of 40 CFR Part 110, 40 CFR Part 117, and 40 CFR Part 302 as soon as you have knowledge of the discharge. State or local requirements may necessitate reporting spills or discharges to local emergency response, public health, or drinking water supply agencies. Contact information must be in locations that are readily accessible and available.

2.1.2.5 **Erosion and Sediment Controls.** To minimize pollutant discharges in stormwater, you must minimize erosion by stabilizing exposed soils at your facility and placing flow velocity dissipation devices at discharge locations to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points. You must also use structural and non-structural control measures to minimize the discharge of sediment. If you use polymers and/or other chemical treatments as part of your controls, you must identify the polymers and/or chemicals used and the purpose in your SWPPP. There are many resources available to help you select appropriate SCMs for erosion and sediment control, including EPA's Stormwater Discharges from Construction Activities website at: https://www.epa.gov/npdes/stormwater-discharges-construction-activities.

2.1.2.6 **Management of Stormwater.** You must divert, infiltrate, reuse, contain, or otherwise reduce stormwater to minimize pollutants in your discharges. In selecting, designing, installing, and implementing appropriate control measures, you are encouraged to consult with EPA's resources relating to stormwater management, including the sector-specific *Industrial Stormwater Fact Sheet Series*, (https://www.epa.gov/npdes/stormwater-discharges-industrial-activities#factsheets) and any similar state or tribal resources.

2.1.2.7 **Salt Storage Piles or Piles Containing Salt.** You must enclose or cover storage piles of salt, or piles containing salt, used for deicing or other commercial or industrial purposes, including maintenance of paved surfaces, in order to minimize pollutant discharges. You must implement appropriate measures (e.g., good housekeeping, diversions, containment) to minimize exposure resulting from adding to or removing materials from the pile. Piles do not need to be enclosed or covered pursuant to this permit if stormwater from the piles is not discharged or if discharges from the piles are authorized under another NPDES permit.

2.1.2.8 Employee Training.

a. Types of Personnel Who Require Training. You must train all employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to comply with this permit (e.g., inspectors, maintenance personnel), including all members of your stormwater pollution prevention team. You must ensure the following personnel understand the requirements of this permit and their specific responsibilities with respect to those requirements:

i. Personnel who are responsible for the design, installation, maintenance, and/or repair of controls (including pollution prevention measures);

ii. Personnel responsible for the storage and handling of chemicals and materials that could become pollutants discharged via stormwater;

iii. Personnel who are responsible for conducting and documenting monitoring and inspections as required in Parts 3 and 4; and

iv. Personnel who are responsible for taking and documenting corrective actions as required in Part 5.

b. Areas of Required Training. Personnel must be trained in at least the following if related to the scope of their job duties (e.g., only personnel responsible for conducting inspections need to understand how to conduct inspections):

i. An overview of what is in the SWPPP;

ii. Spill response procedures, good housekeeping, maintenance requirements, and material management practices;

iii. The location of all the controls required by this permit, and how they are to be maintained;

iv. The proper procedures to follow with respect to the permit's pollution prevention requirements; and

v. When and how to conduct inspections, record applicable findings, and take corrective actions; and

vi. The facility's emergency procedures, if applicable per Part 2.1.1.8.

2.1.2.9 Non-Stormwater Discharges. You must evaluate for the presence of non-stormwater discharges. You must eliminate any non-stormwater discharges not explicitly authorized in Part 1.2.2 or covered by another NPDES permit, including vehicle and equipment/tank wash water (except for those authorized in Part 1.2.2.3 for Sectors G, H, and J). If not covered under a separate NPDES permit, wastewater, wash water and any other unauthorized non-stormwater must be discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements, or otherwise disposed of appropriately.

2.1.2.10 Dust Generation and Vehicle Tracking of Industrial Materials. You must minimize generation of dust and off-site tracking of raw, final, or waste materials in order to minimize pollutants discharged via stormwater.

2.1.3 **Numeric Effluent Limitations Based on Effluent Limitations Guidelines.** If you are in an industrial category subject to one of the effluent limitations guidelines identified in Table 4-3 (see Part 4.2.3.1), you must meet the effluent limits referenced in Table 2-1 below:

Table 2-1. Applicable Effluent Limitations Guidelines

Regulated Activity	40 CFR Part/Subpart	Effluent Limit
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas	Part 429, Subpart I	See Part 8.A.7
Runoff from phosphate fertilizer manufacturing facilities that comes into contact with any raw materials, finished product, by-products or waste products (SIC 2874)	Part 418, Subpart A	See Part 8.C.4
Runoff from asphalt emulsion facilities	Part 443, Subpart A	See Part 8.D.4
Runoff from material storage piles at cement manufacturing facilities	Part 411, Subpart C	See Part 8.E.5
Mine dewatering discharges at crushed stone, construction sand and gravel, or industrial sand mining facilities	Part 436, Subparts B, C, or D	See Part 8.J.9
Runoff from hazardous waste landfills	Part 445, Subpart A	See Part 8.K.6
Runoff from non-hazardous waste landfills	Part 445, Subpart B	See Part 8.L.10
Runoff from coal storage piles at steam electric generating facilities	Part 423	See Part 8.O.8
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Part 449	See Part 8.S.8

2.2 Water Quality-Based Effluent Limitations

2.2.1 **Water Quality Standards.** Your discharge must be controlled as necessary to meet applicable water quality standards of all affected states.

EPA expects that compliance with the conditions in this permit will control discharges as necessary to meet applicable water quality standards. If at any time you become aware, or EPA determines, that your stormwater discharge will not be controlled as necessary such that the receiving water of the United States will not meet an applicable water quality standard, you must take corrective action(s) as required in Part 5.1 and document the corrective actions as required in Part 5.3. You must also comply with any additional requirements that your state or tribe requires in Part 9.

EPA may also require that you undertake additional control measures (to meet the narrative water quality-based effluent limit above) on a site-specific basis, or require you to obtain coverage under an individual permit, if information in your NOI, required reports, or from other sources indicates that your discharges are not controlled as necessary such that the receiving water of the United States will not meet applicable water quality standards. You must implement all measures necessary to be consistent with an available wasteload allocation in an EPA-established or approved TMDL.

2.2.2 **Discharges to Water Quality-Impaired Waters.** You are considered to discharge to an impaired water if the first water of the United States to which your discharge is

identified by a state, tribe or EPA as not meeting an applicable water quality standard, and:

- Requires development of a TMDL (pursuant to section 303(d) of the CWA);
- Is addressed by an EPA-approved or established TMDL; or
- Is not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 CFR 130.7(b)(1).

Note: For discharges that enter a separate storm sewer system[10] prior to discharge, the first water of the United States to which you discharge is the waterbody that receives the water from the storm sewer system.

2.2.2.1 **Existing Discharge to an Impaired Water with an EPA-Approved or Established TMDL.** If you discharge to an impaired water with an EPA-approved or established TMDL, EPA will inform you whether any additional measures are necessary for your discharge to be consistent with the assumptions and requirements of the applicable TMDL and its wasteload allocation, or if coverage under an individual permit is necessary per Part 1.3.8.

2.2.2.2 **Existing Discharger to an Impaired Water without an EPA-Approved or Established TMDL.** If you discharge to an impaired water without an EPA-approved or established TMDL, you are still required to comply with Part 2.2.1 and the monitoring requirements of Part 4.2.5.1. Note that the impaired waters monitoring requirements of Part 4.2.5.1 also apply where EPA determines that your discharge is not controlled as necessary such that the receiving water of the United States will not meet applicable water quality standards in an impaired downstream water segment, even if your discharge is initially to a receiving water(s) that is not identified as impaired according to Part 2.2.2.

2.2.2.3 **New Discharger or New Source to an Impaired Water.** If your authorization to discharge under this permit relied on Part 1.1.6.2 for a new discharger or a new source to an impaired water, you must implement and maintain any measures that enabled you to become eligible under Part 1.1.6.2, and modify such measures as necessary pursuant to any Part 5 corrective actions. You also must comply with Part 2.2.1 and the monitoring requirements of Parts 4.2.5.1.

2.2.3 **Tier 2 Antidegradation Requirements for New Dischargers, New Sources, or Increased Discharges.** If you are a new discharger or a new source (as defined in Appendix A), or an existing discharger required to notify EPA of an increased discharge consistent with Part 7.6 (i.e., a "planned changes" report), and you discharge directly to waters designated by a state or tribe as Tier 2 or Tier 2.5 for antidegradation purposes under 40 CFR 131.12(a), EPA may require that you undertake additional control measures as necessary to ensure compliance with the applicable antidegradation requirements, or notify you that an individual permit application is necessary in accordance with Part 1.3.8. See list of Tier 2 and 2.5 waters in Appendix L.

2.3 **Requirements Relating to Endangered Species, Historic Properties, and CERCLA Sites**

If your eligibility under either Part 1.1.4, Part 1.1.5, and/or Part 1.1.7 was made possible through your, or another operator's, agreement to undertake additional measures, you must comply with all such measures to maintain eligibility under the MSGP. Note that if

[10] Separate storm systems include both municipal storm sewer systems (MS4s) and non-municipal separate storm sewers. Separate storm systems do not include combined sewer systems or sanitary sewer systems.

at any time you become aware, or EPA determines, that your discharges and/or discharge-related activities have the potential to adversely affect listed species and/or critical habitat, have an effect on historic properties, or that your facility discharges to a CERCLA Site listed in Appendix P after you have obtained coverage under this permit, EPA may inform you of the need to implement additional measures on a site-specific basis to meet the effluent limits in this permit, or require you to obtain coverage under an individual permit.

3. Inspections

3.1 Routine Facility Inspections

3.1.1 **Inspection Personnel.** Qualified personnel (as defined in Appendix A) must perform the inspections. The qualified personnel may be a member of your stormwater pollution prevention team, or if the qualified personnel is a third-party you hire (i.e., a contractor), at least one member of your stormwater pollution prevention team must participate in the inspection. Inspectors must consider the results of visual and analytical monitoring (if any) for the past year when planning and conducting inspections.

3.1.2 **Areas that You Must Inspect.** During normal facility operating hours, the qualified personnel must conduct inspections of areas of the facility covered by the requirements in this permit, including, but not limited to, the following:

3.1.2.1 Areas where industrial materials or activities are exposed to stormwater;

3.1.2.2 Areas identified in the SWPPP and those that are potential pollutant sources (see Part 6.2.3);

3.1.2.3 Areas where spills and leaks have occurred in the past three years;

3.1.2.4 Discharge points; and

3.1.2.5 Control measures used to comply with the effluent limits contained in this permit.

3.1.3 **What You Must Look for During an Inspection.** During the inspection, the qualified personnel must examine or look out for, including, but not limited to, the following:

3.1.3.1 Industrial materials, residue or trash that may have or could come into contact with stormwater;

3.1.3.2 Leaks or spills from industrial equipment, drums, tanks and other containers;

3.1.3.3 Offsite tracking of industrial or waste materials, or sediment where vehicles enter or exit the site;

3.1.3.4 Tracking or blowing of raw, final or waste materials from areas of no exposure to exposed areas;

3.1.3.5 Erosion of soils at your facility, channel and streambank erosion and scour in the immediate vicinity of discharge points, per Part 2.1.2.5;

3.1.3.6 Non-authorized non-stormwater discharges, per Part 2.1.2.9;

3.1.3.7 Control measures needing replacement, maintenance or repair; and

3.1.3.8 During an inspection occurring during a stormwater event or stormwater discharge, you must observe control measures implemented to comply with effluent limits to ensure they are functioning correctly. You must also observe discharge points, as defined in Appendix A, during this inspection. If such discharge locations are inaccessible, you must inspect nearby downstream locations.

3.1.4 **Inspection Frequency.** The qualified personnel must conduct inspections at least quarterly (i.e., once each calendar quarter), or in some instances more frequently (e.g., monthly). Increased frequency may be appropriate for some types of equipment, processes and stormwater control measures, or areas of the facility with significant activities and materials exposed to stormwater. At least once each calendar year, the routine inspection must be conducted during a period when a stormwater discharge is occurring.

3.1.5 **Exceptions to Routine Facility Inspections for Inactive and Unstaffed Facilities.** The requirement to conduct facility inspections on a routine basis does not apply at a facility that is inactive and unstaffed, as long as there are no industrial materials or activities exposed to stormwater. Such a facility is only required to conduct an annual site inspection in accordance with Part 3.1. To invoke this exception, you must indicate that your facility is inactive and unstaffed on your NOI. If you are already covered under the permit and your facility has changed from active to inactive and unstaffed, you must modify and re-certify your NOI. You must also include a statement in your SWPPP per Part 6.2.5.2 indicating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to stormwater, in accordance with the substantive requirements in 40 CFR 122.26(g)(4)(iii). The statement must be signed and certified in accordance with Appendix B, Subsection 11. If circumstances change and industrial materials or activities become exposed to stormwater or your facility becomes active and/or staffed, this exception no longer applies, and you must immediately resume routine facility inspections. If you are not qualified for this exception at the time you become authorized under this permit, but during the permit term you become qualified because your facility becomes inactive and unstaffed, and there are no industrial materials or activities exposed to stormwater, you must include the same signed and certified statement as above and retain it with your records pursuant to Part 6.5.

Inactive and unstaffed facilities covered under Sectors G (Metal Mining), H (Coal Mines and Coal Mining-Related Facilities), and J (Non-Metallic Mineral Mining and Dressing) are not required to meet the "no industrial materials or activities exposed to stormwater" standard to be eligible for this exception from routine inspections, per Parts 8.G.8.4, 8.H.9.1, and 8.J.9.1.

3.1.6 **Routine Facility Inspection Documentation.** You must document the findings of your facility inspections and maintain this report with your SWPPP as required in Part 6.5. You must conduct any corrective action required as a result of a routine facility inspection consistent with Part 5. If you conducted a discharge visual assessment required in Part 3.2 during your facility inspection, you may include the results of the assessment with the report required in this Part, as long as you include all components of both types of inspections in the report.

Do not submit your routine facility inspection report to EPA, unless specifically requested to do so. However, you must summarize your findings in the Annual Report per Part 7.4. Document all findings, including but not limited to, the following information.

3.1.6.1 The inspection date and time;

3.1.6.2 The name(s) and signature(s) of the inspector(s);

3.1.6.3 Weather information;

3.1.6.4 All observations relating to the implementation of stormwater control measures at the facility, including:

- **a.** A description of any stormwater discharges occurring at the time of the inspection;
- **b.** Any previously unidentified stormwater discharges from and/or pollutants at the facility;
- **c.** Any evidence of, or the potential for, pollutants entering the stormwater drainage system;
- **d.** Observations regarding the physical condition of and around all stormwater discharge points, including any flow dissipation devices, and evidence of pollutants in discharges and/or the receiving water;
- **e.** Any stormwater control measures needing maintenance, repairs, or replacement;

3.1.6.5 Any additional stormwater control measures needed to comply with the permit requirements;

3.1.6.6 Any incidents of noncompliance; and

3.1.6.7 A statement, signed and certified in accordance with Appendix B, Subsection 11.

3.2 Quarterly Visual Assessment of Stormwater Discharges

3.2.1 **Visual Assessment Frequency.** Once each quarter for your entire permit coverage, you must collect a stormwater sample from each discharge point (except as noted in Part 3.2.4) and conduct a visual assessment of each of these samples. These samples are not required to be collected consistent with 40 CFR Part 136 procedures but must be collected in such a manner that the samples are representative of the stormwater discharge. Guidance on monitoring is available at https://www.epa.gov/sites/production/files/2015-11/documents/msgp_monitoring_guide.pdf.

3.2.2 **Visual Assessment Procedures.** You must do the following for the quarterly visual assessment:

3.2.2.1 Make the assessment of a stormwater discharge sample in a clean, colorless glass or plastic container, and examined in a well-lit area;

3.2.2.2 Make the assessment of the sample you collected within the first 30 minutes of an actual discharge from a storm event. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample must be collected as soon as practicable after the first 30 minutes and you must document why it was not possible to take the sample within the first 30 minutes. In the case of snowmelt, samples must be taken during a period with a measurable discharge; and

3.2.2.3 For storm events, make the assessment on discharges that occur at least 72 hours (three days) from the previous discharge. The 72-hour (three-day) storm interval does not apply if you document that less than a 72-hour (three-day) interval is representative for local storm events during the sampling period.

3.2.2.4 Visually inspect or observe for the following water quality characteristics, which may be evidence of stormwater pollution:

a. Color;

b. Odor;

c. Clarity (diminished);

d. Floating solids;

e. Settled solids;

f. Suspended solids;

g. Foam;

h. Oil sheen; and

i. Other obvious indicators of stormwater pollution.

3.2.2.5 Whenever the visual assessment shows evidence of stormwater pollution in the discharge, you must initiate the corrective action procedures in Part 5.1.1.

3.2.3 **Visual Assessment Documentation**. You must document the results of your visual assessments and maintain this documentation onsite with your SWPPP as required in Part 6.5. Any corrective action required as a result of a quarterly visual assessment must be conducted consistent with Part 5 of this permit. You are not required to submit your visual assessment findings to EPA, unless specifically requested to do so. However, you must summarize your findings in the annual report per Part 7.4. Your documentation of the visual assessment must include, but not be limited to:

3.2.3.1 Sample location(s);

3.2.3.2 Sample collection date and time, and visual assessment date and time for each sample;

3.2.3.3 Personnel collecting the sample and conducting visual assessment, and their signatures;

3.2.3.4 Nature of the discharge (i.e., stormwater from rain or snow);

3.2.3.5 Results of observations of the stormwater discharge;

3.2.3.6 Probable sources of any observed stormwater contamination;

3.2.3.7 If applicable, why it was not possible to take samples within the first 30 minutes; and

3.2.3.8 A statement, signed and certified in accordance with Appendix B, Subsection 11.

3.2.4 Exceptions to Quarterly Visual Assessments

3.2.4.1 **Adverse Weather Conditions.** When adverse weather conditions prevent the collection of stormwater discharge sample(s) during the quarter, you must take a substitute

sample during the next qualifying storm event. Documentation of the rationale for no visual assessment for the quarter must be included with your SWPPP records as described in Part 6.5. Adverse conditions are those that are dangerous or create inaccessibility for personnel, such as local flooding, high winds, electrical storms, or situations that otherwise make sampling impractical, such as extended frozen conditions.

3.2.4.2 **Climates with Irregular Stormwater Discharges.** If your facility is located in an area where limited rainfall occurs during many parts of the year (e.g., arid or semi-arid climate) or in an area where freezing conditions exist that prevent discharges from occurring for extended periods, then your samples for the quarterly visual assessments may be distributed during seasons when precipitation more regularly occurs.

3.2.4.3 **Areas that Receive Snow.** If the facility is in an area that typically receives snow and the facility receives snow at least once over a period of four quarters, at least one quarterly visual assessment must capture snowmelt discharge, as described in Part 4.1.3, taking into account the exception described above for climates with irregular stormwater discharges.

3.2.4.4 **Inactive and Unstaffed Facilities.** The requirement for a quarterly visual assessment does not apply at a facility that is inactive and unstaffed, as long as there are no industrial materials or activities exposed to stormwater. To invoke this exception, you must maintain a statement in your SWPPP per Part 6.2.5.2 indicating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to precipitation, in accordance with the substantive requirements in 40 CFR 122.26(g)(4)(iii). The statement must be signed and certified in accordance with Appendix B, Subsection 11. If circumstances change and industrial materials or activities become exposed to stormwater or your facility becomes active and/or staffed, this exception no longer applies, and you must immediately resume quarterly visual assessments. If you are not qualified for this exception at the time you are authorized under this permit, but during the permit term you become qualified because your facility becomes inactive and unstaffed, and there are no industrial materials or activities that are exposed to stormwater, then you must include the same signed and certified statement as above and retain it with your records pursuant to Part 6.5. Inactive and unstaffed facilities covered under Sectors G (Metal Mining), H (Coal Mines and Coal Mining-Related Facilities), and J (Non-Metallic Mineral Mining and Dressing), are not required to meet the "no industrial materials or activities exposed to stormwater" standard to be eligible for this exception from quarterly visual assessments, consistent with the requirements established in Parts 8.G.8.4, 8.H.9.1, and 8.J.9.1.

3.2.4.5 **Substantially Identical Discharge Points (SIDP).** If your facility has two or more discharge points that discharge substantially identical stormwater effluents, as documented in Part 6.2.5.3, you may conduct quarterly visual assessments of the discharge at just one of the discharge points and report that the results also apply to the SIDPs provided that you conduct visual assessments on a rotating basis of each SIDP throughout the period of your coverage under this permit. If stormwater contamination is identified through visual assessment conducted at a SIDP, you must assess and modify your stormwater control measures as appropriate for each discharge point represented by the monitored discharge point.

4. Monitoring

You must collect and analyze stormwater samples and document monitoring activities consistent with the procedures described in Part 4 and Appendix B, Subsections B.10 – 12, and any additional sector-specific or state/tribal-specific requirements in Parts 8 and 9, respectively. Refer to Part 7 for reporting and recordkeeping requirements.

4.1 Monitoring Procedures

4.1.1 Monitored Stormwater Discharge Points. Applicable monitoring requirements apply to each discharge point authorized by this permit, except as otherwise exempt from monitoring as a "substantially identical discharge point" (SIDP). If your facility has two or more discharge points that you believe discharge substantially identical stormwater effluents, based on the similarities of the general industrial activities and control measures, exposed materials that may significantly contribute pollutants to stormwater, and runoff coefficients of their drainage areas, you may monitor the effluent of just one of the discharge points and report that the results also apply to the SIDP(s). As required in Part 6.2.5.3, your SWPPP must identify each discharge point authorized by this permit and describe the rationale for any SIDP determinations. The allowance for monitoring only one of the SIDP is not applicable to any discharge points with numeric effluent limitations. You are required to monitor each discharge point covered by a numeric effluent limit as identified in Part 4.2.2.

4.1.2 Commingled Discharges. If any authorized stormwater discharges commingle with discharges not authorized under this permit, you must conduct any required sampling of the authorized discharges at a point before they mix with other waste streams, to the extent practicable.

4.1.3 Measurable Storm Events. You must conduct all required monitoring on a storm event that results in an actual discharge ("measurable storm event") that follows the preceding measurable storm event by at least 72 hours (three days). The 72-hour (3-day) storm interval does not apply if you are able to document that less than a 72-hour (3-day) interval is representative for local storm events during the sampling period. In the case of snowmelt, you must conduct monitoring at a time when a measurable discharge occurs.

For each monitoring event, except snowmelt monitoring, you must identify the date and duration (in hours) of the rainfall event, rainfall total (in inches) for that rainfall event, and time (in days) since the previous measurable storm event. For snowmelt monitoring, you must identify the date of the sampling event.

4.1.4 Sample Type. You must take a minimum of one grab sample from a discharge resulting from a measurable storm event as described in Part 4.1.3. You must collect samples within the first 30 minutes of a discharge associated with a measurable storm event. If it is not possible to collect the sample within the first 30 minutes of a measurable storm event, you must collect the sample as soon as possible after the first 30 minutes and keep documentation with the SWPPP explaining why it was not possible to take samples within the first 30 minutes. In the case of snowmelt, you must take samples during a period with a measurable discharge.

For indicator monitoring and benchmark monitoring, you may choose to use a composite sampling method instead of taking grab samples. This composite method may be either flow-weighted or time-weighted and performed manually or with the use of automated sampling equipment. For the purposes of this permit, a flow-

weighted composite sample means a composite sample consisting of a mixture of aliquots collected at a constant or variable time interval, where the volume of each aliquot included in the composite sample is proportional to the estimated or measured incremental discharge volume at the time of the aliquot collection compared to the total discharge volume estimated or measured over the monitoring event. For the purposes of this permit, a time-weighted composite sample means a composite sample consisting of a mixture of equal volume aliquots collected at a regular defined time interval over a specific period of time. Composite sampling must be initiated during the first 30 minutes of the same storm event. If it is not possible to initiate composite sampling within the first 30 minutes of a measurable storm event, you must initiate composite sampling as soon as possible after the first 30 minutes and keep documentation with the SWPPP explaining why it was not possible to initiate composite sampling within the first 30 minutes. You must submit all monitoring results to EPA per Part 4.1.9. Composite sampling may not be used in situations where hold times for processing or sample preservation requirements cannot be satisfied. For parameters measured in-situ with a probe or meter such as dissolved oxygen, conductivity, pH, or temperature, the composite sampling method shall be modified by calculating an average all individual measurements, weighted by flow volume if applicable.

4.1.5 **Adverse Weather Conditions.** When adverse weather conditions as described in Part 3.2.4.1 prevent the collection of stormwater discharge samples according to the relevant monitoring schedule, you must take a substitute sample during the next qualifying storm event. Adverse weather does not exempt you from having to file a benchmark monitoring report in accordance with your sampling schedule. As specified in Part 7.4, you must indicate in Net-DMR any failure to monitor during the regular reporting period.

4.1.6 **Facilities in Climates with Irregular Stormwater Discharges.** If your facility is located in areas where limited rainfall occurs during parts of the year (e.g., arid or semi-arid climates) or in areas where freezing conditions exist that prevent discharges from occurring for extended periods, you may distribute your required monitoring events during seasons when precipitation occurs, or when snowmelt results in a measurable discharge from your facility. You must still collect the required number of samples. As specified in Part 7.4, you must also indicate in Net-DMR that there was no monitoring for the respective monitoring period.

4.1.7 **Monitoring Periods.** Your monitoring requirements in this permit begin in the first full quarter following either May 30, 2021or your date of discharge authorization, whichever date comes later.

- January 1 – March 31
- April 1 – June 30
- July 1 – September 30
- October 1 – December 31

For example, if you obtain permit coverage on April 10, 2021, then your first monitoring quarter for benchmark monitoring is– July 1, 2021 – September 30, 2021 and your first monitoring year for discharges to impaired waters or discharges subject to an effluent limitation guideline is July 1, 2021 – June 30, 2022. This monitoring schedule may be modified in accordance with Part 4.1.6 if you document the revised schedule in your SWPPP. However, you must indicate in Net-DMR any 3-month interval that you did not take a sample.

4.1.8 **Monitoring for Authorized Non-Stormwater Discharges.** You are only required to monitor authorized non-stormwater discharges (as delineated in Part 1.2.2) when they are commingled with stormwater discharges associated with industrial activity.

4.1.9 **Monitoring Reports.** You must report monitoring data using Net-DMR, EPA's electronic DMR tool, as described in Part 7.3 (unless the applicable EPA Regional Office grants you a waiver from electronic reporting, in which case you may submit a paper DMR form).

4.2 Required Monitoring

This permit includes six types of required analytical monitoring, one or more of which may apply to your stormwater discharge:

- Indicator monitoring (Part 4.2.1);
- Benchmark monitoring (Part 4.2.2);
- Annual effluent limitations guidelines monitoring (Part 4.2.3);
- State- or tribal-specific monitoring (Part 4.2.4);
- Impaired waters monitoring (Part 4.2.5); and
- Other monitoring as required by EPA (Part 4.2.6).

Unless otherwise specified, samples must be analyzed consistent with 40 CFR Part 136 analytical methods that are sufficiently sensitive for the monitored parameter. When more than one type of monitoring for the same pollutant at the same discharge point applies (e.g., total suspended solids once per year for an effluent limitation and once per quarter for benchmark monitoring at a given discharge point), you may use a single sample to satisfy both monitoring requirements (i.e., one sample satisfying both the annual effluent limitation sample and one of the four quarterly benchmark monitoring samples). Similarly, when the same type of monitoring is required for the same pollutant but for different activities, you may use a single sample to satisfy both monitoring requirements (i.e., when you are required to monitor for PAHs in stormwater discharges from paved surfaces that will be sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit and you are also required to monitor for PAHs in stormwater discharges since you manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation).

When the effluent limitation is lower than the benchmark threshold for the same pollutant, your Additional Implementation Measure (AIM) trigger is based on an exceedance of the effluent limitation threshold, which would subject you to the AIM requirements of Part 5.2. Exceedance of an effluent limitation associated with the results of any analytical monitoring type required by this Part subjects you to the corrective action requirements of Part 5.1. You must conduct all required monitoring in accordance with the procedures described in Appendix B, Subsection B.10.

Per Part 1.3.7, in the event that the permit is administratively continued, monitoring requirements remain in force and effect at their original frequency during any continuance for operators that were covered prior to permit expiration. In the event that monitoring results are unable to be electronically reported in Net-DMR, operators must maintain monitoring results and records within their SWPPP.

Table 4-1. Summary of Each Type of Monitoring

Monitoring Type	Monitoring Type Applies To	Frequency	Duration	Follow-up Action	Permit Part Reference
Indicator – pH, TSS, COD	Subsectors B2, C5, D2, E3, F5, I1, J3, L2, N2, O1, P1, R1, T1, U3, V1, W1, X1, Y2, Z1, AB1, AC1, and AD1	Quarterly	Entirety of permit coverage	None	Part 4.2.1.1.a
Indicator – PAHs*	Operators with stormwater discharges from paved surfaces that will be sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit; sectors; Sector A facilities that manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation; and Sectors C (SIC 2911), D, F, H, I, M, O, P (SIC 4011, 4013, and 5171), Q (SIC 4491), R, and S	Bi-annually (2 times per year)	First year and fourth year	None	Part 4.2.1.1.b
Benchmark	Subsectors A1, A2, A3, A4, B1, C1, C2, C3, C4, D1, E1, E2, F1, F2, F3, F4, G1, G2, H1, J1, J2, K1, L1, M1, N1, Q1, S1, U1, U2, Y1, AA1, AA2	Quarterly	First year and fourth year	AIM. See Part 5.2.	Part 4.2.2
Effluent limitation guidelines (ELG)	See Part 4.2.3	Annually	Entirety of permit coverage	See Part 5.1	Part 4.2.3
State- or tribal-specific	Depends on the discharge location of your facility. See Part 9				
Impaired Waters	Depends on the receiving waterbody. See Part 4.2.5				
Other as required by EPA	See Part 4.2.6				

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

4.2.1 **Indicator Monitoring.** This permit requires indicator monitoring of stormwater discharges for three parameters – pH, Total Suspended Solids (TSS), and Chemical Oxygen Demand (COD) – for certain sectors/subsectors (see Part 4.2.1.1.a below) and for polycyclic aromatic hydrocarbons (PAHs) for certain sectors/activities, with additional limitations (see Part 4.2.1.1.b below). Indicator monitoring data will provide you and EPA with a baseline and comparable understanding of industrial stormwater discharge quality and potential water quality problems. The indicator monitoring parameters are "report-only" and do not have thresholds or baseline values for comparison, therefore no follow-up action is triggered or required under this part. The requirement in Part 2.2.1

that your stormwater discharge be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards still applies. You may find it useful to evaluate and compare your indicator monitoring data over time to identify any fluctuating values and why they may be occurring, and to further inform any revisions to your SWPPP/SCMs if necessary.[11] Indicator monitoring is report-only and is neither benchmark monitoring nor an effluent limitation. Instead, it is a permit condition. Thus, failure to conduct indicator monitoring is a permit violation.

4.2.1.1 Applicability and Schedule of Indicator Monitoring

a. pH, Total Suspended Solids (TSS), and Chemical Oxygen Demand (COD).

i. Applicability. Operators in the following subsectors must monitor stormwater discharges for pH, TSS, and COD (also specified in the sector-specific requirements in Part 8): B2, C5, D2, E3, F5, I1, J3, L2, N2, O1, P1, R1, T1, U3, V1, W1, X1, Y2, Z1, AB1, AC1, and AD1). Samples must be analyzed consistent with 40 CFR Part 136 analytical methods.

ii. Schedule. You must conduct indicator monitoring of stormwater discharges for pH, TSS, and COD each quarter, beginning in your first full quarter of permit coverage as identified in Part 4.1.7.

b. Polycyclic Aromatic Hydrocarbons (PAH).

i. Applicability. The following operators must monitor stormwater discharges for the 16 individual priority pollutant PAHs (also specified in the sector-specific requirements in Part 8): operators in all sectors with stormwater discharges from paved surfaces that will be sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit; operators in sectors A (facilities that manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation), C (SIC Code 2911), D, F, H, I, M, O, P (SIC Codes 4011, 4013, and 5171), Q (SIC Code 4491), R, and S. Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene. Samples must be analyzed using EPA Method 625.1, or EPA Method 610/Standard Method 6440B if preferred by the operator, consistent with 40 CFR Part 136 analytical methods.

ii. Schedule. You must conduct indicator monitoring of stormwater discharges for PAHs bi-annually (i.e., sample twice per year) in the first and fourth years of permit coverage. Your first year of permit coverage begins in your first full quarter of permit coverage, identified in Part 4.1.7, commencing no earlier than May 30, 2021, followed by two years of no monitoring. Bi-annual monitoring resumes in your fourth year of permit coverage for another year,

[11] Examples of possible reviews and revisions to the SWPPP/SCMs that could be informed by indicator monitoring values include: reviewing sources of pollution or any changes to performed industrial activities and processes; reviewing spill and leak procedures, and/or non-stormwater discharges; conducting a single comprehensive clean-up, implementing a new control measure, and/or increasing inspections. EPA notes, however, that these actions are not required under the 2021 MSGP in response to indicator monitoring.

after which you may discontinue bi-annual PAH monitoring for the remainder of your permit coverage.

4.2.1.2 **Exception for Facilities in Climates with Irregular Stormwater Discharges**. As described in Part 4.1.6, facilities in climates with irregular stormwater discharges may modify this schedule provided you report this revised schedule directly to EPA by the due date of the first indicator monitoring sample (see EPA Regional contacts in Part 7.8), and you keep this revised schedule with the facility's SWPPP as specified in Part 6.5. As noted in Part 4.1.7, you must indicate in Net-DMR any 3-month interval that you did not take a sample.

4.2.1.3 **Exception for Inactive and Unstaffed Facilities.** The requirement for indicator monitoring does not apply at a facility that is inactive and unstaffed, provided that there are no industrial materials or activities exposed to stormwater. To invoke this exception, you must do the following:

a. Maintain a statement with your SWPPP stating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to stormwater in accordance with the substantive requirements in 40 CFR 122.26(g) and sign and certify the statement in accordance with Appendix B, Subsection 11.

b. If circumstances change and industrial materials or activities become exposed to stormwater or your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the applicable indicator monitoring requirements under Part 4.2.1 as if you were in your first year of permit coverage. You must indicate in your NOI that your facility has materials or activities exposed to stormwater or has become active and/or staffed.

c. If you are not qualified for this exception at the time you are authorized under this permit, but during the permit term you become qualified because your facility is inactive and unstaffed, and there are no industrial materials or activities that are exposed to stormwater, then you must notify EPA of this change on your NOI form. You may discontinue indicator monitoring once you have notified EPA, and prepared and signed the certification statement described above concerning your facility's qualification for this special exception.

Note: This exception has different requirements for Sectors G, H, and J (see Part 8).

4.2.2 **Benchmark Monitoring.** This permit requires benchmark monitoring parameters of stormwater discharges for certain sectors/subsectors. Benchmark monitoring data are primarily for your use to determine the overall effectiveness of your stormwater control measures and to assist you in determining when additional action(s) may be necessary to comply with the effluent limitations in Part 2.

The benchmark thresholds are not effluent limitations; a benchmark exceedance, therefore, is not a permit violation. However, if a benchmark exceedance triggers Additional Implementation Measures (AIM) in Part 5.2, failure to conduct any required measures is a permit violation. At your discretion, you may take more than four samples during separate stormwater discharge events to determine the average benchmark parameter value for facility discharges.

4.2.2.1 Applicability of Benchmark Monitoring.

You must monitor stormwater discharges for any benchmark parameters specified for the industrial sector(s), both primary industrial activity and any co-located industrial activities, applicable to your discharge listed in Part 8. If your facility is in one of the industrial sectors subject to benchmark thresholds that are hardness-dependent, you must include in your NOI a hardness value, established consistent with the procedures in Appendix J, that is representative of your receiving water. Hardness is not a specific benchmark and therefore the permit does not include a benchmark threshold with which to compare.

Samples must be analyzed consistent with 40 CFR Part 136 analytical methods and using test procedures with quantitation limits at or below benchmark thresholds for all benchmark parameters for which you are required to sample, i.e. sufficiently sensitive methods. For averaging purposes, you may use a value of zero for any individual sample parameter which is determined to be less than the method detection limit. For sample values that fall between the method detection limit and the quantitation limit (i.e., a confirmed detection but below the level that can be reliably quantified), use a value halfway between zero and the quantitation limit.

4.2.2.2 Summary of the 2021 MSGP Benchmark Thresholds

The Table 4-2 presents the 2021 MSGP's freshwater and saltwater benchmark thresholds. Sector-specific benchmark requirements are detailed in Part 8. Values match the original units found in the source documents, detailed in the corresponding section of the fact sheet.

Table 4-2 2021 MSGP Benchmark Thresholds

Pollutant		2021 MSGP Benchmark Threshold
Total Recoverable Aluminum (T)		1,100 µg/L
Total Recoverable Beryllium		130 µg/L
Biochemical Oxygen Demand (5-day)		30 mg/L
pH		6.0 – 9.0 s.u.
Chemical Oxygen Demand		120 mg/L
Total Phosphorus		2.0 mg/L
Total Suspended Solids (TSS)		100 mg/L
Nitrate and Nitrite Nitrogen		0.68 mg/L
Turbidity		50 NTU
Total Recoverable Antimony		640 µg/L
Ammonia		2.14 mg/L
Total Recoverable Cadmium	Freshwater [a]	1.8 µg/L
	Saltwater	33 µg/L
Total Recoverable Copper	Freshwater	5.19 µg/L
	Saltwater	4.8 µg/L

Pollutant		2021 MSGP Benchmark Threshold
Total Recoverable Cyanide	Freshwater	22 µg/L
	Saltwater	1 µg/L
Total Recoverable Mercury	Freshwater	1.4 µg/L
	Saltwater	1.8 µg/L
Total Recoverable Nickel	Freshwater [a]	470 µg/L
	Saltwater	74 µg/L
Total Recoverable Selenium	Freshwater	1.5 µg/L for still/standing (lentic) waters 3.1 µg/L for flowing (lotic) waters
	Saltwater	290 µg/L
Total Recoverable Silver	Freshwater [a]	3.2 µg/L
	Saltwater	1.9 µg/L
Total Recoverable Zinc	Freshwater [a]	120 µg/L
	Saltwater	90 µg/L
Total Recoverable Arsenic	Freshwater [a]	150 µg/L
	Saltwater	69 µg/L
Total Recoverable Lead	Freshwater [a]	82 µg/L
	Saltwater	210 µg/L

[a] These pollutants are dependent on water hardness where discharged into freshwaters. The freshwater benchmark value listed is based on a hardness of 100 mg/L. When a facility analyzes receiving water samples for hardness, the operator must use the hardness ranges provided in Table 1 in Appendix J of the 2021 MSGP and in the appropriate tables in Part 8 of the 2021 MSGP to determine applicable benchmark values for that facility. Benchmark thresholds for discharges of these pollutants into saline waters are not dependent on receiving water hardness and do not need to be adjusted.

4.2.2.3 **Benchmark Monitoring Schedule.** Benchmark monitoring of stormwater discharges is required quarterly, as identified in Part 4.1.7, in the first and fourth year of permit coverage, as follows:

a. **Year one of permit coverage:** You must conduct benchmark monitoring for all parameters applicable to your subsector(s) for four quarters in your first year of permit coverage, beginning in your first *full* quarter of permit coverage, no earlier than May 30, 2021.

i. If the annual average[12] for a parameter does not exceed the benchmark threshold, you can discontinue benchmark monitoring for that parameter for the next two years (i.e., eight quarters).

[12] For this permit, an annual average exceedance for a parameter can occur if: (a) The four-quarter annual average for a parameter exceeds the benchmark threshold; or (b) Fewer than four quarterly samples are collected, but a single sample or the sum of any sample results within the sampling year exceeds the benchmark threshold by more than four times for a parameter. The result in (b) indicates an exceedance is mathematically certain (i.e., the sum of quarterly sample results to date is already more than four times the benchmark threshold). For pH, an annual average exceedance can only occur if the four-quarter annual average exceeds the benchmark threshold.

ii. If the annual average for a parameter exceeds the benchmark threshold, you must comply with Part 5.2 (Additional Implementation Measures responses and deadlines) and continue quarterly benchmark monitoring for that parameter until results indicate that the annual average is no longer exceeded, after which you can discontinue benchmark monitoring for that parameter until monitoring resumes in year four of permit coverage, per Part 4.2.2.3.b below.

b. Year four of permit coverage: You must conduct benchmark monitoring for all parameters applicable to your subsector(s) for four quarters in your fourth year of permit coverage (i.e., your thirteenth through sixteenth quarters), unless the first quarter of your fourth year of permit coverage occurs on or after the date this permit expires.

i. If the annual average[13] for a parameter does not exceed the benchmark threshold, you can discontinue benchmark monitoring for that parameter for the remainder of your permit coverage.

ii. If the annual average for a parameter exceeds the benchmark threshold, you must comply with Part 5.2 (Additional Implementation Measures responses and deadlines) and continue quarterly benchmark monitoring for that parameter until results indicate that the annual average is no longer exceeded, after which you can discontinue benchmark monitoring for that parameter for the remainder of permit coverage.

4.2.2.4 **Exception for Facilities in Climates with Irregular Stormwater Discharges**. As described in Part 4.1.6, facilities in climates with irregular stormwater discharges may modify this quarterly schedule provided you report this revised schedule directly to EPA by the due date of the first benchmark sample (see EPA Regional contacts in Part 7.8), and you keep this revised schedule with the facility's SWPPP as specified in Part 6.5. When conditions prevent you from obtaining four samples in four consecutive quarters, you must continue monitoring until you have the four samples required for calculating your benchmark monitoring average. As noted in Part 4.1.7, you must indicate in Net-DMR any 3-month interval that you did not take a sample.

4.2.2.5 **Exception for Inactive and Unstaffed Facilities.** The requirement for benchmark monitoring does not apply at a facility that is inactive and unstaffed, provided that there are no industrial materials or activities exposed to stormwater. To invoke this exception, you must do the following:

a. Maintain a statement with your SWPPP stating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to stormwater in accordance with the substantive requirements in 40 CFR 122.26(g) and sign and certify the statement in accordance with Appendix B, Subsection 11.

b. If circumstances change and industrial materials or activities become exposed to stormwater or your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the applicable benchmark monitoring requirements under Part 4.2.2 as if you were in your first year of permit coverage. You must indicate in your NOI that your facility has

[13] *Ibid*.

materials or activities exposed to stormwater or has become active and/or staffed.

c. If you are not qualified for this exception at the time you are authorized under this permit, but during the permit term you become qualified because your facility is inactive and unstaffed, and there are no industrial materials or activities that are exposed to stormwater, then you must notify EPA of this change on your NOI form. You may discontinue benchmark monitoring once you have notified EPA, and prepared and signed the certification statement described above concerning your facility's qualification for this special exception.

Note: This exception has different requirements for Sectors G, H, and J (see Part 8).

4.2.3 Effluent Limitations Monitoring

4.2.3.1 Monitoring Based on Effluent Limitations Guidelines. Table 4-3 identifies the stormwater discharges subject to effluent limitation guidelines that are authorized for coverage under this permit. An exceedance of the effluent limitation is a permit violation. Beginning in the first full quarter following May 30, 2021 or your date of discharge authorization, whichever date comes later, you must monitor once per year at each stormwater discharge point containing the discharges identified in Table 4-3 for the parameters specified in the sector-specific section of Part 8.

Table 4-3. Required Monitoring for Effluent Limits Based on Effluent Limitations Guidelines

Regulated Activity	Effluent Limit	Monitoring Frequency	Sample Type
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas	See Part 8.A.8	1/year	Grab
Runoff from phosphate fertilizer manufacturing facilities that comes into contact with any raw materials, finished product, by-products or waste products (SIC 2874)	See Part 8.C.5	1/year	Grab
Runoff from asphalt emulsion facilities	See Part 8.D.5	1/year	Grab
Runoff from material storage piles at cement manufacturing facilities	See Part 8.E.6	1/year	Grab
Mine dewatering discharges at crushed stone, construction sand and gravel, or industrial sand mining facilities	See Part 8.J.10	1/year	Grab
Runoff from hazardous waste landfills	See Part 8.K.7	1/year	Grab
Runoff from non-hazardous waste landfills	See Part 8.L.11	1/year	Grab
Runoff from coal storage piles at steam electric generating facilities	See Part 8.O.8	1/year	Grab
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non- propeller aircraft departures.	See Part 8.S.9	1/year	Grab

4.2.3.2 Substantially Identical Discharge Points Not Applicable. You must monitor each discharge point discharging stormwater from any regulated activity identified in Table

4-3. The substantially identical discharge points (SIDP) monitoring provisions are not available for numeric effluent limit monitoring.

4.2.3.3 **Follow-up Actions if Discharge Exceeds Numeric Effluent Limitation.** If any monitoring value exceeds a numeric effluent limitation contained in this permit, you must indicate the exceedance on a "Change NOI" form in the NPDES eReporting Tool (NeT), and you must conduct follow-up monitoring within 30 calendar days (or during the next measurable storm event, should none occur within 30 days) of implementing corrective action(s) taken per Part 5.1. If your follow-up monitoring exceeds the applicable effluent limitation, you must:

a. **Submit an Exceedance Report:** You must submit an Exceedance Report no later than 30 days after you have received your laboratory result consistent with Part 7.5; and

b. **Continue to Monitor:** You must monitor, at least quarterly, until your stormwater discharge is in compliance with the effluent limit or until EPA waives the requirement for additional monitoring. Once your discharge is back in compliance with the effluent limitation you must indicate this on a "Change NOI" form per Part 7.3.

4.2.4 State or Tribal Required Monitoring

4.2.4.1 **Sectors Required to Conduct State or Tribal Monitoring.** You must comply with any state or tribal monitoring requirements in Part 9 of the permit applicable to your facility's discharge location.

4.2.4.2 **State or Tribal Monitoring Schedule.** If a monitoring frequency is not specified for an applicable requirement in Part 9, you must monitor once per year for the duration of your permit coverage.

4.2.5 **Impaired Waters Monitoring.** For the purposes of this permit, your facility is considered to discharge to an impaired water if the first water of the United States to which you discharge is identified by a state, tribe, or EPA pursuant to section 303(d) of the CWA as not meeting an applicable water quality standard (i.e., without an EPA-approved or -established TMDL, see Part 4.2.5.1.a below), or has been removed from the 303(d) list either because the impairments are addressed by an EPA-approved or established TMDL or is covered by pollution control requirements that meet the requirements of 40 CFR 130.7(b)(1) (see Part 4.2.5.1.b below). For discharges that enter a separate storm sewer system[14] prior to discharge, the first water of the United States to which you discharge is the waterbody that receives the stormwater discharge from the separate storm sewer system.

4.2.5.1 Facilities Required to Monitor Stormwater Discharges to Impaired Waters.

a. Discharges to impaired waters without an EPA-approved or established TMDL:

Monitoring is required annually in the first year of permit coverage and again in the fourth year of permit coverage as follows, unless you detect a pollutant causing an impairment, in which case annual monitoring must continue.

[14] Separate storm sewer systems do not include combined sewer systems or sanitary sewer systems. Separate storm sewer systems include both municipal storm sewer systems (MS4s) and non-municipal separate storm sewers.

i. **Year one of permit coverage:** You must take your first annual sample in your first year of permit coverage, which begins in the first full quarter following May 30, 2021 or your date of discharge authorization, whichever date comes later. You must monitor for all pollutants causing impairments using a standard analytical method, provided one exists (see 40 CFR Part 136), once at each discharge point (except substantially identical discharge points) discharging stormwater to impaired waters without an EPA-approved or established TMDL. *Note*: Except where otherwise directed by EPA, if the pollutant of concern for the impaired waterbody is suspended solids, turbidity, or sediment/sedimentation, you must monitor for Total Suspended Solids (TSS). If a pollutant of concern is expressed in the form of an indicator or surrogate pollutant, you must monitor for that indicator or surrogate pollutant. No monitoring is required when a waterbody's biological communities are impaired but no pollutant, including indicator or surrogate pollutants, is specified as causing the impairment, or when a waterbody's impairment is related to hydrologic modifications, impaired hydrology, or other non-pollutant. Operators must consult the applicable EPA Regional Office for any available guidance regarding required monitoring parameters under this part.

   1) If monitoring results indicate the monitored pollutant is not detected in your discharge, or is within the acceptable range for a given parameter for the waterbody to meet its designated use (e.g., pH or temperature),[15] you may discontinue monitoring for that pollutant for the next two years. You must resume monitoring for that pollutant in year four of permit coverage, if applicable, per Part 4.2.5.1.a.ii.

   2) If monitoring results indicate that the monitored pollutant is detected in your stormwater discharge, or is outside the acceptable range for a given parameter (e.g., pH or temperature) for the waterbody to meet its designated use,[16] you must continue to monitor for the pollutant(s) annually until no longer detected, after which you may discontinue monitoring for that pollutant until monitoring resumes in year four of permit coverage, if applicable, per Part 4.2.5.1.a.ii.

ii. **Year four of permit coverage.** Annual monitoring resumes in your fourth year of permit coverage for another year for a sub-set of parameters monitored for in the first monitoring year. In the fourth year of permit coverage, you must monitor for all pollutants causing impairment(s) that are associated with your industrial activity and/or are listed as a benchmark parameter for your subsector(s) (regardless of whether you have satisfied benchmark monitoring for the parameter per Part 4.2.2). To determine these pollutants, start with the list of pollutants for which the receiving waterbody is impaired and for which a standard analytical method exists (see 40 CFR Part 136), then compare that list to the industrial pollutants you identified in Part 6.2.3.2 and any sector-specific benchmark monitoring pollutants in Part 8 and, if applicable, Part 9. You must monitor for pollutants that appear on both the impairments list and either your industrial pollutants and/or your benchmark parameter list, including "indicator" or "surrogate" pollutants (as described in the "note" in 1 above). You must monitor once at each discharge point (except

[15] Refer to your state's Water Quality Standards or contact the EPA Regional Office for assistance.
[16] *Ibid*.

substantially identical discharge points (SIDPs)) for these pollutants. Consistent with Part 4.2, annual samples may be used to also satisfy any single remaining quarterly benchmark monitoring requirement applicable to your discharge.

1) If monitoring results indicate the monitored pollutant is not detected in your discharge, or is within the acceptable range for a given parameter for the waterbody to meet its designated use (e.g., pH or temperature),[17] you may discontinue monitoring for that pollutant for the remainder of your permit coverage.

2) If the monitoring results indicate that the monitored pollutant is detected in your discharge, or is outside the acceptable range for a given parameter (e.g., pH or temperature) for the waterbody to meet its designated use, you must continue to monitor for the pollutant(s) annually until no longer detected, after which you may discontinue monitoring for that pollutant for the remainder of your permit coverage.

iii. ***Exception****:* If sampling results in either Part 4.2.5.1.a.i or Part 4.2.5.1.a.ii above indicate the monitored pollutant is detected in your discharge, but you have determined that its presence is caused solely by natural background sources, you may discontinue monitoring for that pollutant for the duration of your permit coverage.

To support a determination that the pollutant's presence is caused solely by natural background sources, you must document and maintain with your SWPPP, as required by Part 6.5:

1) An explanation of why you believe that the presence of the pollutant of concern in your discharge is not related to the activities or materials at your facility; and

2) Data and/or studies that tie the presence of the pollutant of concern inyour discharge to natural background sources in the watershed.

Natural background pollutants include those that occur naturally as a result of native soils, and vegetation, wildlife, or ground water. Natural background pollutants do not include legacy pollutants from earlier activity on your site, or pollutants in run-on from neighboring sources that are not naturally occurring. However, you may be eligible to discontinue annual monitoring for pollutants that occur solely from these sources and should consult the applicable EPA Regional Office for related guidance.

b. Discharges to impaired waters with an EPA-approved or established TMDL: For stormwater discharges to waters for which there is an EPA-approved or established TMDL, you are not required to monitor for the pollutant(s) for which the TMDL was written unless EPA informs you, upon examination of the applicable TMDL and its wasteload allocation, that you are subject to such a requirement consistent with the assumptions and findings of the applicable TMDL and its wasteload allocation. EPA's notice will include specifications on stormwater discharge monitoring parameters and frequency. If there are questions, you may consult the applicable EPA Regional Office for guidance regarding required monitoring under this Part.

[17] *Ibid*.

4.2.5.2 **Exception for Inactive and Unstaffed Facilities.** The requirement for impaired waters monitoring does not apply at a facility that is inactive and unstaffed, as long as there are no industrial materials or activities exposed to stormwater. To invoke this exception, you must do the following:

a. Maintain a statement with your SWPPP stating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to stormwater in accordance with the substantive requirements in 40 CFR 122.26(g) and sign and certify the statement in accordance with Appendix B, Subsection 11.

b. If circumstances change and industrial materials or activities become exposed to stormwater or your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the applicable impaired waters monitoring requirements under Part 4.2.5 as if you were in your first year of permit coverage. You must indicate in a "Change NOI" form per Part 7.2 that your facility has materials or activities exposed to stormwater or has become active and/or staffed.

c. If you are not qualified for this exception at the time you are authorized under this permit, but during the permit term you become qualified because your facility is inactive and unstaffed, and there are no industrial materials or activities that are exposed to stormwater, then you must notify EPA of this change on your NOI form. You may discontinue impaired waters monitoring once you have notified EPA, and prepared and signed the certification statement described above concerning your facility's qualification for this special exception.

Note: This exception has different requirements for Sectors G, H, and J (see Part 8).

4.2.6 **Additional Monitoring Required by EPA.** EPA may notify you of additional stormwater discharge monitoring requirements that EPA determines are necessary to meet the permit's effluent limitations. Any such notice will briefly state the reasons for the monitoring, locations, and parameters to be monitored, frequency and period of monitoring, sample types, and reporting requirements.

5. Corrective Actions and Additional Implementation Measures (AIM)

5.1 Corrective Action

5.1.1 **Conditions Requiring SWPPP Review and Revision to Ensure Effluent Limits are Met.** When any of the following conditions occur or are detected during an inspection, monitoring or other means, or EPA or the operator of the MS4 through which you discharge informs you that any of the following conditions have occurred, you must review and revise, as appropriate, your SWPPP (e.g., sources of pollution; spill and leak procedures; non-stormwater discharges; the selection, design, installation and implementation of your stormwater control measures) so that this permit's effluent limits are met and pollutant discharges are minimized:

5.1.1.1 An unauthorized release or discharge (e.g., spill, leak, or discharge of non-stormwater not authorized by this or another NPDES permit to a water of the United States) occurs at your facility.

5.1.1.2 A discharge violates a numeric effluent limit listed in Table 2-1 and/or in your Part 8 sector-specific requirements.

5.1.1.3 Your stormwater control measures are not stringent enough for your stormwater discharge to be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards or to meet the non-numeric effluent limits in this permit.

5.1.1.4 A required control measure was never installed, was installed incorrectly, ornot in accordance with Parts 2 and/or 8, or is not being properly operated or maintained.

5.1.1.5 Whenever a visual assessment shows evidence of stormwater pollution (e.g., color, odor, floating solids, settled solids, suspended solids, foam).

5.1.2 **Conditions Requiring SWPPP Review to Determine if Modifications Are Necessary.** If construction or a change in design, operation, or maintenance at your facility occurs that significantly changes the nature of pollutants discharged via stormwater from your facility, or significantly increases the quantity of pollutants discharged, you must review your SWPPP (e.g., sources of pollution, spill and leak procedures, non-stormwater discharges, selection, design, installation and implementation of your stormwater control measures) to determine if modifications are necessary to meet the effluent limits in this permit.

5.1.3 Deadlines for Corrective Actions

5.1.3.1 **Immediate Actions.** You must immediately take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a permanent solution, including cleaning up any contaminated surfaces so that the material will not discharge in subsequent storm events. In Part 5, the term "immediately" means that the day you find a condition requiring corrective action, you must take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a permanent solution. However, if you identify a problem too late in the work day to initiate corrective action, you must perform the corrective action the following work day morning. The term "all reasonable steps" means you must respond to the conditions triggering the corrective action, such as cleaning up any exposed materials that may be discharged in a storm event (e.g., through sweeping, vacuuming) or making arrangements (i.e., scheduling) for a new SCM to be installed.

5.1.3.2 **Subsequent Actions.** If additional actions are necessary beyond those implemented pursuant to Part 5.1.3.1, you must complete the corrective actions (e.g., install a new or modified control and make it operational, complete the repair) before the next storm event if possible, and within 14 calendar days from the time of discovery that the condition in Part 5.1.1 is not met. If it is infeasible to complete the corrective action within 14 calendar days, you must document why it is infeasible to complete the corrective action within the 14-day timeframe. You must also identify your schedule for completing the work, which must be done as soon as practicable after the 14-day timeframe but no longer than 45 days after discovery. If the completion of corrective action will exceed the 45-day timeframe, you may take the minimum additional time necessary to complete the corrective action, provided that you notify the appropriate EPA Regional Office of your intention to exceed 45 days, your rationale for an extension, and a completion date, which you must also include in your corrective action documentation (see Part 5.3). Where your corrective actions result in changes to any of the controls or procedures documented in your SWPPP, you must modify your SWPPP accordingly within 14 calendar days of completing corrective action work.

These time intervals are not grace periods, but are schedules considered reasonable for documenting your findings and for making repairs and improvements. They are

included in this permit to ensure that the conditions prompting the need for these repairs and improvements do not persist indefinitely.

5.1.4 **Effect of Corrective Action.** If the event triggering the review is a permit violation (e.g., non-compliance with an effluent limit), correcting it does not remove the original violation. Additionally, failing to take corrective action in accordance with this section is an additional permit violation. EPA may consider the appropriateness and promptness of corrective action in determining enforcement responses to permit violations.

5.1.5 **Substantially Identical Discharge Points.** If the event triggering corrective action is associated with a discharge point that had been identified as a "substantially identical discharge point" (SIDP) (see Parts 3.2.4.5 and 4.1.1), your review must assess the need for corrective action for all related SIDPs. Any necessary changes to control measures that affect these other discharge points must also be made before the next storm event if possible, or as soon as practicable following that storm event. Any corrective actions must be conducted within the timeframes set forth in Part 5.1.3.

5.2 Additional Implementation Measures (AIM)

If any of the following AIM triggering events in Parts 5.2.3, 5.2.4, or 5.2.5 occur, you must follow the response procedures described in those parts, called "additional implementation measures" or "AIM." There are three AIM levels: AIM Level 1, Level 2, and Level 3. You must respond as required to different AIM levels which prescribe sequential and increasingly robust responses when a benchmark exceedance occurs. You must follow the corresponding AIM level responses and deadlines described in Parts 5.2.1, 5.2.2, and 5.2.3 unless you qualify for an exception under Part 5.2.6.

5.2.1 Baseline Status

Once you receive discharge authorization under this permit per Part 1.3, you are in a baseline status for all applicable benchmark parameters. If an AIM triggering event occurs and you have proceeded sequentially to AIM Level 1, 2 or 3, you may return directly to baseline status once the corresponding AIM-level response and conditions are met.

5.2.2 **AIM Triggering Events.** If an annual average exceeds an applicable benchmark threshold based on the following events, the AIM requirements have been triggered for that benchmark parameter. You must follow the corresponding AIM-level responses and deadlines described in Parts 5.2.3, 5.2.4, and 5.2.5 unless you qualify for an exception under Part 5.2.6. An annual average exceedance for a parameter can occur if:

5.2.2.1 The four-quarterly annual average for a parameter exceeds the benchmark threshold, or

5.2.2.2 Fewer than four quarterly samples are collected, but a single sample or the sum of any sample results within the sampling year exceeds the benchmark threshold by more than four times for a parameter. This result indicates an exceedance is mathematically

certain (i.e., the sum of quarterly sample results to date is already more than four times the benchmark threshold).[18]

5.2.3 AIM Level 1

Your status changes from baseline to AIM Level 1 if quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred, unless you qualify for an exception under Part 5.2.6.

5.2.3.1 AIM Level 1 Responses. If any of the triggering events in Part 5.2.2 occur, you must:

a. Review SWPPP/Stormwater Control Measures. Immediately review your SWPPP and the selection, design, installation, and implementation of your stormwater control measures to ensure the effectiveness of your existing measures and determine if modifications are necessary to meet the benchmark threshold for the applicable parameter,[19] and

b. Implement Additional Measures. After reviewing your SWPPP/stormwater control measures, you must implement additional measures, considering good engineering practices, that would reasonably be expected to bring your exceedances below the parameter's benchmark threshold; or if you determine nothing further needs to be done with your stormwater control measures, you must document per Part 5.3 and include in your annual report why you expect your existing control measures to bring your exceedances below the parameter's benchmark threshold for the next 12-month period.

5.2.3.2 AIM Level 1 Deadlines. If any modifications to or additional control measures are necessary in response to AIM Level 1, you must implement those modifications or control measures within 14 days of receipt of laboratory results, unless doing so within 14 days is infeasible. If doing so within 14 days is infeasible, you must document per Part 5.3 why it is infeasible and implement such modifications within 45 days.

5.2.3.3 Continue Quarterly Benchmark Monitoring. After compliance with AIM Level 1 responses and deadlines, you must continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the AIM triggering event at all affected stormwater discharge points, beginning no later than the next full quarter after compliance.

5.2.3.4 AIM Level 1 Status Update. While in AIM Level 1 status, you may either:

a. Return to Baseline Status. Your AIM Level 1 status will return to baseline status if the AIM Level 1 responses have been met and continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has not occurred after four quarters of monitoring (i.e., the benchmark threshold is no longer exceeded for the parameter(s)). You may discontinue benchmark monitoring for that parameter until monitoring resumes in year 4 of permit coverage per Part 4.2.2.3 or if you have fulfilled all benchmark monitoring

[18] For pH, an annual average exceedance can only occur if the four-quarter annual average exceeds the benchmark threshold.

[19] Examples may include: review sources of pollution, spill and leak procedures, and/or non-stormwater discharges; conducting a single comprehensive clean-up, making a change in subcontractor, implementing a new control measure, and/or increasing inspections.

requirements per Part 4.2.2.3, then you may discontinue monitoring for that parameter for the remainder of the permit.

b. Advance to AIM Level 2. Your AIM Level 1 status advances to AIM Level 2 status if you have completed AIM Level 1 responses and the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred (i.e., the benchmark threshold continues to be exceeded for the same parameter(s)).

5.2.4 AIM Level 2

Your status changes from AIM Level 1 to AIM Level 2 if your continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred (i.e., the benchmark threshold continues to be exceeded for the parameter(s)), unless you qualify for an exception under Part 5.2.6.

5.2.4.1 AIM Level 2 Responses. If any of the events in Part 5.2.2 occur, you must review your SWPPP and implement additional pollution prevention/good housekeeping SCMs, considering good engineering practices, beyond what you did in your AIM Level 1 responses that would reasonably be expected to bring your exceedances below the parameter's benchmark threshold. Refer to the MSGP sector-specific fact sheets for recommended controls found at [https://www.epa.gov/npdes/stormwater-discharges-industrial-activities-fact-sheets-and-guidance].

5.2.4.2 AIM Level 2 Deadlines. You must implement additional pollution prevention/good housekeeping SCMs within 14 days of receipt of laboratory results that indicate an AIM triggering event has occurred and document per Part 5.3 how the measures will achieve benchmark thresholds. If it is feasible for you to implement a measure, but not within 14 days, you may take up to 45 days to implement such measure. You must document per Part 5.3 why it was infeasible to implement such measure in 14 days. EPA may also grant you an extension beyond 45 days, based on an appropriate demonstration by you, the operator.

5.2.4.3 Continue Quarterly Benchmark Monitoring. After compliance with AIM Level 2 responses and deadlines, you must continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the AIM triggering event at all affected discharge points, beginning no later than the next full quarter after compliance.

5.2.4.4 AIM Level 2 Status Update. While in AIM Level 2 status, you may either:

a. Return to Baseline Status. Your AIM Level 2 status will return to baseline status if the AIM Level 2 responses have been met and the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has not occurred after four quarters of monitoring (i.e., the benchmark threshold is no longer exceeded for the parameter(s)). You may discontinue benchmark monitoring for that parameter until monitoring resumes in year 4 of permit coverage per Part 4.2.2.3, or if you have fulfilled all benchmark monitoring requirements per Part 4.2.2.3, then you may discontinue monitoring for that parameter for the remainder of the permit.

b. Advance to AIM Level 3. Your AIM Level 2 status advances to AIM Level 3 status if you have completed the AIM Level 2 responses and the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2

has occurred (i.e., the benchmark threshold continues to be exceeded for the same parameter(s)).

5.2.5 AIM Level 3

Your status changes from AIM Level 2 to AIM Level 3 if your continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred (i.e., the benchmark threshold continues to be exceeded for the parameter(s)), unless you qualify for an exception per Part 5.2.6.

5.2.5.1 AIM Level 3 Responses. if any of the triggering events in Part 5.2.2 occur, you must install structural source controls (e.g., permanent controls such as permanent cover, berms, and secondary containment), and/or treatment controls (e.g., sand filters, hydrodynamic separators, oil-water separators, retention ponds, and infiltration structures), except as provided in Part 5.2.6 (AIM Exceptions). The controls or treatment technologies or treatment train you install should be appropriate for the pollutants that triggered AIM Level 3 and should be more rigorous than the pollution prevention/good housekeeping-type stormwater control measures implemented under AIM Tier 2 in Part 5.2.4. You must select controls with pollutant removal efficiencies that are sufficient to bring your exceedances below the benchmark threshold. You must install such stormwater control measures for the discharge point(s) in question and for substantially identical discharge points (SIDPs), unless you individually monitor those SIDPs and demonstrate that AIM Level 3 requirements are not triggered at those discharge points.

5.2.5.2 AIM Level 3 Deadlines. You must identify the schedule for installing the appropriate structural source and/or treatment stormwater control measures within 14 days and install such measures within 60 days. If is not feasible within 60 days, you may take up to 90 days to install such measures, documenting in your SWPPP per Part 5.3 why it is infeasible to install the measure within 60 days. EPA may also grant you an extension beyond 90 days, based on an appropriate demonstration by you, the operator.

5.2.5.3 Continue Quarterly Benchmark Monitoring. After compliance with AIM Level 3 responses and deadlines, you must continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the AIM triggering event at all affected discharge points, beginning no later than the next full quarter after compliance.

5.2.5.4 AIM Level 3 Status Update. While in AIM Level 3 status, you may either:

a. Return to Baseline Status. Your AIM Level 3 status will return to baseline status if the AIM Level 3 response(s) have been met and the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has not occurred after four quarters of monitoring (i.e., the benchmark threshold is no longer exceeded for the parameter(s)). You may discontinue benchmark monitoring for that parameter until monitoring resumes in what would be year 4 of permit coverage per Part 4.2.2.3, or if you have fulfilled all benchmark monitoring requirements per Part 4.2.2.3, then you may discontinue monitoring for that parameter for the remainder of the permit.

b. Continue in AIM Level 3. Your AIM Level 3 status will remain at Level 3 if you have completed the AIM Level 3 responses and the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred (i.e., the benchmark threshold continues to be exceeded for the same parameter(s)). You must continue quarterly benchmark monitoring for the next

four quarters for the parameter(s) that caused the AIM triggering event at all affected discharge points, beginning no later than the next full quarter after compliance. If you continue to exceed the benchmark threshold for the same parameter even after compliance with AIM Level 3, EPA may require you to apply for an individual permit.

5.2.6 AIM Exceptions

Following the occurrence of an AIM triggering event per Part 5.2.2, at any point or tier level of AIM and following four quarters of benchmark monitoring (or sooner if the exceedance is triggered by less than four quarters of data), you may qualify for an exception below from AIM requirements and continued benchmark monitoring. Regardless if you qualify for and claim an exception, you must still review your SCMs, SWPPP, and other on-site activities to determine if actions or modifications are necessary or appropriate in light of your benchmark exceedance(s). If claiming an AIM exception, you must follow the requirements to demonstrate that you qualify for the exception as provided below. If you qualify for an exception, you are not required to comply with the AIM responses or the continuation of quarterly benchmark monitoring for any parameters for which you can demonstrate that the benchmark exceedance is:

5.2.6.1 **Solely Attributable to Natural Background Pollutant Levels:** You must demonstrate that the benchmark exceedance is solely attributable to the presence of that pollutant in natural background sources, provided that all the following conditions are met and you submit your analysis and documentation to the applicable EPA Regional Office upon request:

- **a.** The four-quarter average concentration of your benchmark monitoring results (or fewer than four-quarters of data that trigger an exceedance) is less than or equal to the concentration of that pollutant in the natural background; and
- **b.** You document and maintain with your SWPPP, as required in Part 6.5.9, your supporting rationale for concluding that benchmark exceedances are in fact attributable solely to natural background pollutant levels. You must include in your supporting rationale any data previously collected by you or others (including literature studies) that describe the levels of natural background pollutants in your stormwater discharge. Natural background pollutants are those substances that are naturally occurring in soils or ground water. Natural background pollutants do not include legacy pollutants from earlier activity on your site, or pollutants in run-on from neighboring sources which are not naturally occurring, such as other industrial facilities or roadways.

5.2.6.2 **Due to Run-On:** You must demonstrate and obtain EPA agreement that run-on from a neighboring source (e.g., a source external to your facility) is the cause of the exceedance, provided that all the following conditions are met and you submit your analysis and documentation to the applicable EPA Regional Office for concurrence:

- **a.** After reviewing and revising your SWPPP, as appropriate, you should notify the other facility or entity contributing run-on to your discharges and request that they abate their pollutant contribution.
- **b.** If the other facility or entity fails to take action to address their discharges or sources of pollutants, you should contact your applicable EPA Regional Office.

5.2.6.3 **Due to an abnormal event:** You must immediately document per Part 5.3 that the AIM triggering event was abnormal, a description explaining what caused the abnormal event, and how any measures taken within 14 days of such event will prevent a reoccurrence of the exceedance. You must also collect a sample during the next measurable storm event to demonstrate that the result is less than the benchmark threshold, in which case you do not trigger any AIM requirements based on the abnormal event. You must report the result of this sample in NeT-DMR in lieu of the result from the sample that caused the AIM triggering event. You may avail yourself of the "abnormal" demonstration opportunity at any AIM Level, one time per parameter, and one time per discharge point, which shall include substantially identical discharge points (SIDP), provided you qualify for the exception.

5.2.6.4 **For Aluminum and Copper benchmark parameters only: Demonstrated to not result in an exceedance of your facility-specific value using the national recommended water quality criteria in-lieu of the applicable MSGP benchmark threshold:**

To be eligible for the exception, you must demonstrate to EPA that your stormwater discharge(s) that exceeded the applicable nationally representative MSGP benchmark threshold would not result in an exceedance of a derived facility-specific value. The demonstration to EPA, which will be made publicly available, must meet the minimum elements below in order to be considered for and approved by the applicable EPA Regional Office. If you exceed the MSGP benchmark threshold for aluminum or copper, you must still comply with any applicable AIM requirements and additional benchmark monitoring until the demonstration is made to and approved by the applicable EPA Regional Office. In this case, EPA suggests that samples collected for any continued benchmark monitoring also be analyzed for the required input parameters for each model for efficiency. If you are an existing operator and you anticipate an exceedance of the MSGP benchmark(s) based on previous monitoring data and expect to utilize this exception(s), EPA recommends you begin the required data collection in your first year of permit coverage.

a. **Aluminum:**

i. Conditions for this exception are:

1) Use of EPA's 2018 National Recommended Aluminum Aquatic Life Criteria: https://www.epa.gov/wqc/aquatic-life-criteria-aluminum;

2) In-stream waterbody sampling for the three water quality input parameters for the recommended criteria model: pH, total hardness, and dissolved organic carbon (DOC); and

3) Completion of sampling events sufficient to capture spatial and temporal variability. Sampling events must adequately represent each applicable season at the facility's location, which would likely be over the course of at least one year. An equal number of ambient waterbody samples must be collected at a single upstream and downstream location from the operator's discharge point(s) to the receiving water of the United States. Where there exists no ambient source water upstream of the operator's discharge point(s) to the receiving water of the United States, samples of the ambient downstream waterbody conditions are sufficient.

ii. The demonstration provided to EPA must include, at minimum:

1) A description of the sampling, analysis, and quality assurance procedures that were followed for data collection, following the guidance in Section

3 of EPA's Industrial Stormwater Monitoring and Sampling Guide. https://www.epa.gov/sites/production/files/2015-11/documents/msgp_monitoring_guide.pdf;

2) The input parameters and export of results from the Aluminum Criteria Calculator, available at: https://www.epa.gov/sites/production/files/2018-12/aluminum-criteria-calculator-v20.xlsm; and,

3) A narrative summary of results.

b. Copper (only for discharges to freshwater):

i. Conditions for this exception are:

1) Use of EPA's 2007 National Recommended Freshwater Copper Aquatic Life Criteria: https://www.epa.gov/wqc/aquatic-life-criteria-copper;

2) In-stream waterbody sampling for the 10 water quality input parameters to the BLM for copper: pH; dissolved organic carbon (DOC); alkalinity; temperature; major cations (calcium, magnesium, sodium, and potassium); and major anions (sulfate, chloride);

3) The water quality input parameters, with the exception of temperature, must fall within the range of conditions recommended for use in the BLM, found in Table 1-1 of the Data Requirements document: https://www.epa.gov/sites/production/files/2015-11/documents/copper-data-requirements-training.pdf; and

4) Completion of sampling events sufficient to capture spatial and temporal variability. Because some of the BLM input parameters are known to vary seasonally, EPA suggests a possible starting point of at least one sampling event per season.[20] Sampling events must adequately represent each applicable season at the facility's location, which would likely be over the course of at least one year. An equal number of ambient waterbody samples must be collected at a single upstream and downstream location from the operator's discharge point(s) to the receiving water of the United States. Where there exists no ambient source water upstream of the operator's discharge point(s) to the receiving water of the United States, samples of the ambient downstream waterbody conditions are sufficient.

ii. The demonstration provided to EPA must include, at minimum:

1) A description of the sampling, analysis, and quality assurance procedures that were followed for data collection, following the guidance in Section 3 of EPA's Industrial Stormwater Monitoring and Sampling Guide.

[20] EPA training materials on Copper BLM for Data Requirements states that spatial variability in the BLM input parameters caused by physical factors such as watershed size or the presence or absence of a point source discharge(s) to a waterbody should also be considered when determining how many sampling events should be collected when using the BLM to develop site-specific copper criteria. Spatial variability in the BLM input parameters should also be considered when determining how many sampling locations should be selected for development of site-specific copper criteria using the BLM. Regardless of the number of sampling events involved, data collection should reflect site-specific characteristics and consider special circumstances that may affect copper toxicity throughout the expected range of receiving water conditions. See https://www.epa.gov/sites/production/files/2015-11/documents/copper-data-requirements-training.pdf.

https://www.epa.gov/sites/production/files/2015-11/documents/msgp_monitoring_guide.pdf;

2) A discussion of how the data collected reflects the site-specific characteristics and how the operator considered special circumstances that may affect copper toxicity throughout the expected range of receiving water conditions;

3) The input file and export of the results from the BLM software, which can be requested at: https://www.epa.gov/wqs-tech/copper-biotic-ligand-model; and

4) A narrative summary of results.

5.2.6.5 Demonstrated to not result in any exceedance of water quality standards: You must demonstrate to EPA within 30 days of the AIM triggering event that the triggering event does not result in any exceedance of water quality standards. If it is not feasible to complete this demonstration within 30 days, you may take up to 90 days, documenting in your SWPPP why it is infeasible to complete the demonstration within 30 days. EPA may also grant you an extension beyond 90 days, based on an appropriate demonstration by you, the operator. The demonstration to EPA, which will be made publicly available, must include the following minimum elements in order to be considered for approval by the EPA Regional Office:

a. the water quality standards applicable to the receiving water;

b. the average flow rate of the stormwater discharge;

c. the average instream flow rates of the receiving water immediately upstream and downstream of the discharge point;

d. the ambient concentration of the parameter(s) of concern in the receiving water immediately upstream and downstream of the discharge point demonstrated by full-storm composite sampling;

e. the concentration of the parameter(s) of concern in the stormwater discharge demonstrated by full-storm, flow-weighted composite sampling;

f. any relevant dilution factors applicable to the discharge; and

g. the hardness of the receiving water.

Timeframe of EPA Review of Your Submitted Demonstration: EPA will review and either approve or disapprove of such demonstration within 90 days of receipt (EPA may take up to 180 days upon notice to you before the 90th day that EPA needs additional time).

- **EPA Approval of Your Submitted Demonstration**. If EPA approves such demonstration within this timeframe, you have met the requirements for this exception, and you do not have to comply with the corresponding AIM requirements and continued benchmark monitoring.
- **EPA Disapproval of Your Submitted Demonstration.** If EPA disapproves such demonstration within this timeframe, you must comply with the corresponding AIM requirements and continued benchmark monitoring, as required. Compliance with the AIM requirements would begin from the date EPA notifies you of the disapproval unless you submit a Notice of Dispute to the applicable EPA Regional Office in Part 7 within 30 days of EPA's disapproval.

- **EPA Does Not Provide Response Related to Your Submitted Demonstration**. If EPA does not provide a response on the demonstration within this timeframe, you may submit to the EPA Regional Office in Part 7 a Notice of Dispute.
- **Operator Submittal of Notice of Dispute.** You may submit all relevant materials, including support for your demonstration and all notices and responses to the Water Division Director for the applicable EPA Region to review within 30 days of EPA's disapproval or after 90 days (or 180 days if EPA has provided notice that it needs more time) of not receiving a response from EPA.
- **EPA Review of Notice of Dispute.** EPA will send you a response within 30 days of receipt of the Notice of Dispute. Time for action by you, the operator, upon disapproval shall be tolled during the period from filing of the Notice of Dispute until the decision on the Notice of Dispute is issued by the Water Division Director for the applicable EPA Region.

5.3 Corrective Action and AIM Documentation

5.3.1 **Documentation within 24 Hours.** You must document the existence of any of the conditions listed in Parts 5.1.1, 5.2.3, 5.2.4, or 5.2.5 within 24 hours of becoming aware of such condition. You are not required to submit this documentation to EPA, unless specifically required or requested to do so. However, you must summarize your findings in the annual report per Part 7.4. Include the following information in your documentation:

5.3.2 Description of the condition or event triggering the need for corrective action review and/or AIM response. For any spills or leaks, include the following information: a description ofthe incident including material, date/time, amount, location, and reason for spill, and any leaks, spills or other releases that resulted in discharges of pollutants to waters of United States, through stormwater or otherwise;

5.3.2.1 Date the condition/triggering event was identified;

5.3.2.2 Description of immediate actions taken pursuant to Part 5.1.3.1 to minimize or prevent the discharge of pollutants. For any spills or leaks, include response actions, the date/time clean-up completed, notifications made, and staff involved. Also include any measures taken to prevent the reoccurrence ofsuch releases (see Part 2.1.2.4); and

5.3.2.3 A statement, signed and certified in accordance with Appendix B, Subsection 11.

5.3.3 **Documentation within 14 Days.** You must also document the corrective actions and/or AIM responses you took or will take as a result of the conditions listed in Part 5.1.1, 5.2.3, 5.2.4, and/or 5.2.5 within 14 days from the time of discovery of any of those conditions/triggering events. Provide the dates when you initiated and completed (or expect to complete) each corrective action and/or AIM response. If infeasible to complete the necessary corrective actions and/or AIM responses within the specified timeframe, per Parts 5.1.1, 5.2.3, 5.2.4, or 5.2.5, you must document your rationale and schedule for installing the controls and making them operational as soon as practicable after the specified timeframe. If you notified EPA regarding an allowed extension of the specified timeframe, you must document your rationale for an extension. Include any additional information and/or rationale that is required and/or applicable to the specified corrective action and/or AIM response in Part 5. You are not required to submit this documentation to EPA, unless specifically required or

requested to do so. However, you must summarize your corrective actions and/or AIM responses in the Annual Report per Part 7.4.

6. Stormwater Pollution Prevention Plan (SWPPP)

You must prepare a SWPPP for your facility before submitting your NOI for permit coverage. If you prepared a SWPPP for coverage under a previous version of this permit, you must review and update the SWPPP to implement all provisions of this permit prior to submitting your NOI. The SWPPP does not contain effluent limitations; such limitations are contained in Parts 2, 8, and 9 of the permit. The SWPPP is intended to document the selection, design, and installation of stormwater control measures to meet the permit's effluent limits. The SWPPP is a living document. Facilities must keep their SWPPP up-to-date throughout their permit coverage, such as making revisions and improvements to their stormwater management program based on new information and experiences with major storm events. As distinct from the SWPPP, the additional documentation requirements (see Part 6.5) are so that you document the implementation (including inspection, maintenance, monitoring, and corrective action) of the permit requirements.

Note: Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the SWPPP, during an inspection, etc.

6.1 Person(s) Responsible for Preparing the SWPPP

You shall prepare the SWPPP in accordance with good engineering practices and to industry standards. The SWPPP may be developed by either a person on your staff or a third party you hire, but it must be developed by a "qualified person" and must be certified per the signature requirements in Part 6.2.7. If EPA concludes that the SWPPP is not in compliance with Part 6.2 of this permit, EPA may require the SWPPP to be reviewed, amended as necessary, and certified by a Professional Engineer, or for Sector G, H or J, by a Professional Geologist, with the education and experience necessary to prepare an adequate SWPPP.

Note: A "qualified person," as defined in Appendix A, is a person knowledgeable in the principles and practices of industrial stormwater controls and pollution prevention, and possesses the education and ability to assess conditions at the industrial facility that could impact stormwater quality, and the education and ability to assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit.

6.2 Required Contents of Your SWPPP

To be covered under this permit, your SWPPP must contain all of the following elements:

- Stormwater pollution prevention team (Part 6.2.1);
- Site description (Part 6.2.2);
- Summary of potential pollutant sources (Part 6.2.3);
- Description of stormwater control measures (Part 6.2.4);
- Schedules and procedures (Part 6.2.5);
- Documentation to support eligibility pertaining to other federal laws (Part 6.2.6); and

- Signature requirements (Part 6.2.7).

Where your SWPPP refers to procedures in other facility documents, such as a Spill Prevention, Control and Countermeasure (SPCC) Plan or an Environmental Management System (EMS), copies of the relevant portions of those documents must be kept with your SWPPP.

6.2.1 **Stormwater Pollution Prevention Team.** You must identify the staff members (by name or title) that comprise the facility's stormwater pollution prevention team as well as their individual responsibilities. Your stormwater pollution prevention team is responsible for overseeing development of the SWPPP, any modifications to it, and for implementing and maintaining control measures and taking corrective actions and/or AIM responses, when required. Each member of the stormwater pollution prevention team must have ready access to either an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP.

6.2.2 **Site Description.** Your SWPPP must include the following:

6.2.2.1 **Activities at the facility.** Provide a description of the nature of the industrial activities at your facility.

6.2.2.2 **General location map.** Provide a general location map (e.g., U.S. Geological Survey (USGS) quadrangle map) with enough detail to identify the location of your facility and all receiving waters for your stormwater discharges.

6.2.2.3 **Site map.** Provide a map showing:

a. Boundaries of the property and the size of the property in acres;

b. Location and extent of significant structures and impervious surfaces;

c. Directions of stormwater flow (use arrows), including flows with a significant potential to cause soil erosion;

d. Locations of all stormwater control measures;

e. Locations of all receiving waters, including wetlands, in the immediate vicinity of your facility. Indicate which waterbodies are listed as impaired and which are identified by your state, tribe, or EPA as Tier 2, Tier 2.5, or Tier 3 waters;

f. Locations of all stormwater conveyances including ditches, pipes, and swales;

g. Locations of potential pollutant sources identified under Part 6.2.3.2;

h. Locations where significant spills or leaks identified under Part 6.2.3.3 have occurred;

i. Locations of all stormwater monitoring points;

j. Locations of stormwater inlets and discharge points, with a unique identification code for each discharge point (e.g., 001, 002), indicating if you are treating one or more discharge points as "substantially identical" under Parts 3.2.4.5, 6.2.5.3, and 4.1.1, and an approximate outline of the areas draining to each discharge point;

k. If applicable, municipal separate storm sewer systems (MS4s) and where your stormwater discharges to them;

l. Areas of Endangered Species Act-designated critical habitat for endangered or threatened species, if applicable.

m. Locations of the following activities where such activities are exposed to precipitation:

ii. fueling stations;

iii. vehicle and equipment maintenance and/or cleaning areas;

iv. loading/unloading areas;

v. locations used for the treatment, storage, or disposal of wastes;

vi. liquid storage tanks;

vii. processing and storage areas;

viii. immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility;

ix. transfer areas for substances in bulk;

x. machinery;

xi. locations and sources of run-on to your site from adjacent property that contains significant quantities of pollutants.

6.2.3 **Summary of Potential Pollutant Sources.** You must describe in the SWPPP areas at your facility where industrial materials or activities are exposed to stormwater or from which authorized non-stormwater discharges originate. Industrial materials or activities include but are not limited to: material handling equipment or activities; industrial machinery; raw materials; industrial production and processes; and intermediate products, by-products, final products, and waste products. Material handling activities include, but are not limited to: the storage, loading and unloading, transportation, disposal, or conveyance of any raw material, intermediate product, final product or waste product. For structures located in areas of industrial activity, you must be aware that the structures themselves are potential sources of pollutants. This could occur, for example, when metals such as aluminum or copper are leached from the structures as a result of acid rain.

For each area identified, the description must include:

6.2.3.1 **Activities in the Area.** A list of the industrial activities exposed to stormwater (e.g., material storage; equipment fueling, maintenance, and cleaning; cutting steel beams).

6.2.3.2 **Pollutants.** A list of the pollutant(s) or pollutant constituents (e.g., crankcase oil, zinc, sulfuric acid, cleaning solvents) associated with each identified activity, which could be exposed to rainfall or snowmelt and could be discharged from your facility. The pollutant list must include all significant materials that have been handled, treated, stored or disposed, and that have been exposed to stormwater in the three years prior to the date you prepare or amend your SWPPP.

6.2.3.3 **Spills and Leaks.** You must document where potential spills and leaks could occur that could contribute pollutants to stormwater discharges, and the corresponding discharge point(s) that would be affected by such spills and leaks. You must document all significant spills and leaks of oil or toxic or hazardous substances that actually occurred at exposed areas, or that drained to a stormwater conveyance, in the three years prior to the date you prepare or amend your SWPPP.

Note: Significant spills and leaks include, but are not limited to, releases of oil or hazardous substances in excess of quantities that are reportable under CWA section 311 (see 40 CFR 110.6 and 40 CFR 117.21) or section 102 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC § 9602. This permit does not relieve you of the reporting requirements of 40 CFR 110, 40 CFR 117, and 40 CFR 302 relating to spills or other releases of oils or hazardous substances.

6.2.3.4 **Unauthorized Non-Stormwater Discharges Evaluation.** By the end of the first year of your permit coverage under this permit, you must inspect and document all discharge points at your facility as part of the SWPPP. If it is infeasible to complete the evaluation within the first year of permit coverage, you must document in your SWPPP why this is the case and identify the schedule by which you expect to complete the evaluation. Documentation of your evaluation must include:

a. The date of the evaluation;

b. A description of the evaluation criteria used;

c. A list of the discharge points or onsite drainage points that were directly observed during the evaluation; and

d. If there are any unauthorized non-stormwater discharges (see Part 1.2.2 for the exclusive list of authorized non-stormwater discharges under this permit) you must immediately take action(s), such as implementing control measures, to eliminate those discharges or seek an individual NPDES wastewater permit and document that you obtained the permit (for example, a floor drain was sealed, a sink drain was re-routed to sanitary, or an NPDES permit application was submitted for an unauthorized cooling water discharge).

e. An explanation of everything you did to immediately eliminate the unauthorized discharge per Part 5 Corrective Actions.

6.2.3.5 **Salt Storage.** You must document the location of any storage piles containing salt used for deicing or other commercial or industrial purposes.

6.2.3.6 **Sampling Data.** Existing permitted facilities must summarize all stormwater discharge sampling data collected at the facility during the previous permit term. The summary shall include a narrative description (and may include data tables/figures) that adequately summarizes the collected sampling data tosupport identification of potential pollution sources at your facility. New dischargers and new sources must provide a summary of any available stormwater data they may have.

6.2.4 **Description of Stormwater Control Measures to Meet Technology-Based and Water Quality-Based Effluent Limits.** You must document the location and type of stormwater control measures you have specifically chosen and/or designed to comply with:

6.2.4.1 Part 2.1.2: Non-numeric technology-based effluent limits;

6.2.4.2 Parts 2.1.3 and 8: Applicable numeric effluent limitations guidelines-based limits;

6.2.4.3 Part 2.2: Water quality-based effluent limits;

6.2.4.4 Part 2.3: Any additional measures that formed the basis of eligibility regarding Endangered Species Act-listed threatened and endangered species or their critical habitat, National Historic Preservation Act historic properties, and/orfederal CERCLA Site requirements;

6.2.4.5 Parts 8 and 9: Applicable effluent limits;

6.2.4.6 Regarding your control measures, you must also document, as appropriate:

a. How you addressed the selection and design considerations in Part 2.1.1;

b. How they address the pollutant sources identified in Part 6.2.3.

Effluent limit requirements in Part 2.1.2 that do not involve the site-specific selection of a stormwater control measure or are specific activity requirements (e.g., "cleaning catch basins when the depth of debris reaches two-thirds (2/3) of the sump depth, or in line with manufacturer specifications, whichever is lower, and keeping the debris surface at least six inches below the lowest outlet pipe") are marked with an asterisk (*). For the requirements marked with an asterisk, you may include extra information, or you may just "copy-and-paste" these effluent limits word-for-word into your SWPPP without providing additional documentation.

6.2.5 Schedules and Procedures

6.2.5.1 **Pertaining to Stormwater Control Measures Used to Comply with the Effluent Limits in Part 2**. You must document the following in your SWPPP:

a. **Good Housekeeping (see Part 2.1.2.2)** – A schedule or the convention used for determining when pickup and disposal of waste materials occurs. Also provide a schedule for routine inspections for leaks and conditions of drums, tanks and containers.

b. **Maintenance (see Part 2.1.2.3)** – Preventative maintenance procedures, including regular inspections, testing, maintenance and repair of all stormwater control measures to avoid situations that may result in leaks, spills, and other releases, and any back-up practices in place should a storm event resulting in a stormwater discharge occur while a control measure is off-line. The SWPPP shall include the schedule or frequency for maintaining all control measures used to comply with the effluent limits in Part 2;

c. **Spill Prevention and Response Procedures (see Part 2.1.2.4**) – Procedures for preventing and responding to spills and leaks, including notification procedures. For preventing spills, include in your SWPPP the stormwater control measures for material handling and storage, and the procedures for preventing spills that can contaminate stormwater. Also specify cleanup equipment, procedures and spill logs, as appropriate, in the event of spills. You may reference the existence of other plans for Spill Prevention, Control and Countermeasure (SPCC) developed for the facility under section 311 of the CWA or BMP programs otherwise required by an NPDES permit for the facility, provided that you keep a copy of that other plan onsite and make it available for review consistent with Part 6.4;

d. **Erosion and Sediment Controls (see Part 2.1.2.5)** – If you use polymers and/or other chemical treatments as part of your erosion and sediment controls, you must identify the polymers and/or chemicals used and the purpose;

e. **Employee Training (see Part 2.1.2.8)** – The elements of your employee training plan shall include all, but not necessarily limited to, the requirements set forth in Part 2.1.2.8, and also the following:

ii. The content of the training;

iii. The frequency/schedule of training for employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the conditions of this permit;

iv. A log of the dates on which specific employees received training.

6.2.5.2 **Pertaining to Inspections and Assessments.** You must document in your SWPPP your procedures for performing, as appropriate, the types of inspections specified by this permit, including:

a. Routine facility inspections (see Part 3.1) and;

b. Quarterly visual assessment of stormwater discharges (see Part 3.2).

For each type of inspection performed, your SWPPP must identify:

a. Person(s) or positions of person(s) responsible for the inspection;

b. Schedules for conducting inspections, including tentative schedule for facilities in climates with irregular stormwater discharges (see Part 3.2.4);

c. Specific items to be covered by the inspection, including schedules for specific discharge points.

If you are invoking the exception for inactive and unstaffed facilities relating to routine facility inspections and quarterly visual assessments, you must include in your SWPPP the information to support this claim as required by Parts 3.1.5 and 3.2.4.

6.2.5.3 **Pertaining to Monitoring**

a. **Procedures for Each Type of Monitoring.** You must document in your SWPPP procedures for conducting the six types of analytical stormwater discharge monitoring specified by this permit, where applicable to your facility, including:

i. Indicator monitoring (Part 4.2.1);

ii. Benchmark monitoring (Part 4.2.2);

iii. Effluent limitations guidelines monitoring (Part 4.2.3);

iv. State- or tribal-specific monitoring (Part 4.2.4);

v. Impaired waters monitoring (Part 4.2.5);

vi. Other monitoring as required by EPA (Part 4.2.6).

b. **Documentation for Each Type of Monitoring.** For each type of stormwater discharge monitoring, you must document in your SWPPP:

i. Locations where samples are collected, including any determination that two or more discharge points are substantially identical;

ii. Parameters for sampling and the frequency of sampling for each parameter;

iii. Schedules for monitoring at your facility, including schedule for alternate monitoring periods for climates with irregular stormwater discharges (see Part 4.1.6);

iv. Any numeric control values (benchmark thresholds, effluent limitations guidelines, TMDL-related requirements, or other requirements) applicable to stormwater discharges from each discharge point;

v. Procedures (e.g., responsible staff, logistics, laboratory to be used) for gathering storm event data, as specified in Part 4.1.

c. Exception for Inactive and Unstaffed Facilities. If you are invoking the exception for inactive and unstaffed facilities for indicator monitoring, benchmark monitoring or impaired waters monitoring, you must include in your SWPPP the information to support this claim as required by Part 4.2.2.5 and 4.2.5.2.

d. Exception for Substantially Identical Discharge Points (SIDP). You must document the following in your SWPPP if you plan to use the SIDP exception for your quarterly visual assessment requirements in Part 3.2.4 or your indicator, benchmark, or impaired waters monitoring requirements in Parts 4.2.1, 4.2.2, and 4.2.5, respectively (see also Part 4.1.1):

i. Location of each SIDP;

ii. Description of the general industrial activities conducted in the drainage area of each discharge point;

iii. Description of the control measures implemented in the drainage area of each discharge point;

iv. Description of the exposed materials located in the drainage area of each discharge point that are likely to be significant contributors of pollutants via stormwater discharges;

v. An estimate of the runoff coefficient of the drainage areas (low = under 40%; medium = 40 to 65%; high = above 65%);

vi. Why the discharge points are expected to discharge substantially identical effluents.

6.2.6 Documentation to Support Eligibility Pertaining to Other Federal Laws

6.2.6.1 Documentation Regarding Endangered Species Act-Listed Threatened and Endangered Species and Critical Habitat Protection. You must keep with your SWPPP the documentation supporting your determination with regard to Part 1.1.4.

6.2.6.2 Documentation Regarding National Historic Preservation Act Historic Properties. You must keep with your SWPPP the documentation supporting your determination with regard to Part 1.1.5.

6.2.7 Signature Requirements. You must sign and date your SWPPP in accordance with Appendix B, Subsection 11.

6.3 Required SWPPP Modifications

You must modify your SWPPP based on any corrective actions and deadlines required under Part 5. You must sign and date any SWPPP modifications in accordance with Appendix B, Subsection 11.

6.4 SWPPP Availability

You must retain a complete copy of your current SWPPP required by this permit at the facility in any accessible format. A complete SWPPP includes any documents incorporated by reference and all documentation supporting your permit eligibility pursuant to Part 1.1 of this permit, as well as your signed and dated certification page. Regardless of the format, the SWPPP must be immediately available to facility employees, EPA, a state or tribe, the operator of an MS4 into which you discharge, and representatives of the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) at the time of an on-site inspection.

Your current SWPPP or certain information from your current SWPPP described below must also be made available to the public (except any confidential business information (CBI) or restricted information [as defined in Appendix A]), but you must clearly identify those portions of the SWPPP that are being withheld from public access; to do so, you must comply with one of the following two options:

6.4.1 Making Your SWPPP Publicly Available

You have three options to comply with the public availability requirements for the SWPPP: attaching your SWPPP to your NOI; providing a URL of your SWPPP in your NOI; or providing SWPPP information in your NOI. To remain current for all three options, you must update your SWPPP (by updating the attachment per Part 6.4.1.1 via a Change NOI, updating your webpage per Part 6.4.1.2, or updating the SWPPP information in the NOI per Part 6.4.1.3 via a Change NOI no later than 45 days after conducting the final routine facility inspection for the year required in Part 3.1. You may switch your preferred option throughout your permit coverage, but you must update your NOI as necessary to indicate your change in option. You are not required to post any CBI or restricted information (as defined in Appendix A) (such information may be redacted), but you must clearly identify those portions of the SWPPP that are being withheld from public access. CBI may not be withheld from those staff cleared for CBI review within EPA, USFWS or NMFS.

6.4.1.1 Attaching Your SWPPP to your NOI: You may attach a copy of your SWPP, and any SWPPP modifications, records, and other reporting elements that must be kept with your SWPPP, to your NOI in NeT-MSGP.

6.4.1.2 Providing a URL of your SWPPP in your NOI: You may provide a URL in your NOI in NeT-MSGP where your SWPPP can be found, and maintain your current SWPPP at this URL. You must post any SWPPP modifications, records, and other reporting elements that must be kept with your SWPPP required for the previous year at the same URL as the main body of the SWPPP.

6.4.1.3 Providing SWPPP Information in your NOI. You may include the following information in your NOI in NeT-MSGP. Irrespective of this requirement, EPA may provide access to portions of your SWPPP to a member of the public upon request (except any CBI or restricted information (as defined in Appendix A)).

a. Onsite industrial activities exposed to stormwater, including potential spill and leak areas (see Parts 6.2.3.1, 6.2.3.3 and 6.2.3.5);

b. Pollutants or pollutant constituents associated with each industrial activity exposed to stormwater that could be discharged in stormwater and/or any authorized non-stormwater discharges listed in Part 1.2.2 (see Part 6.2.3.2);

c. Stormwater control measures you employ to comply with the non-numeric technology-based effluent limits required in Part 2.1.2 and Part 8, and any other measures taken to comply with the requirements in Part 2.2 Water Quality-Based Effluent Limitations (see Part 6.2.4). If you use polymers and/or other chemical treatments as part of your erosion and sediment controls, you must identify the polymers and/or chemicals used and the purpose; and

d. Schedule for good housekeeping and maintenance (see Part 6.2.5.1) and schedule for all inspections required in Part 3 (see Part 6.2.5.2).

6.5 Additional Documentation Requirements

You are required to keep the following inspection, monitoring, and certification records with your SWPPP that together keep your records complete and up-to-date, and demonstrate your full compliance with the conditions of this permit:

6.5.1 A copy of the NOI submitted to EPA along with any correspondence exchanged between you and EPA specific to coverage under this permit;

6.5.2 A copy of the authorization email you receive from the EPA assigning your NPDES ID;

6.5.3 A copy of this permit (either a hard copy or an electronic copy easily available to SWPPP personnel);

6.5.4 Documentation of any maintenance and repairs of stormwater control measures, including the date(s) of regular maintenance, date(s) of discovery of areas in need of repair/replacement, and for repairs, date(s) that the control measure(s) returned to full function, and the justification for any extended maintenance/repair schedules (see Part 2.1.2.3);

6.5.5 All inspection reports, including the Routine Facility Inspection Reports (see Part 3.1.6) and Visual Assessment Documentation (see Part 3.2.3);

6.5.6 Description of any deviations from the schedule for visual assessments and/or monitoring, and the reason for the deviations (e.g., adverse weather or it was impracticable to collect samples within the first 30 minutes of a measurable storm event) (see Parts 3.2.4 and 4.1.5);

6.5.7 Corrective action documentation required per Part 5.1;

6.5.8 Documentation of any benchmark threshold exceedances, which AIM Level triggering event the exceedance caused, and AIM response you employed per Part 5.2, including:

6.5.8.1 The AIM triggering event;

6.5.8.2 The AIM response taken;

6.5.8.3 Any rationale that SWPPP/SCM changes were unnecessary;

6.5.8.4 Any documentation required to meet any AIM exception per Part 5.2.6.

6.5.9 Documentation to support any determination that pollutants of concern are not expected to be present above natural background levels if you discharge directly to impaired waters, and that such pollutants were not detected in your discharge after three years or were solely attributable to natural background sources (see Part 4.2.5.1); and

6.5.10 Documentation to support your claim that your facility has changed its status from active to inactive and unstaffed with respect to the requirements to conduct routine facility inspections (see Part 3.1.5), quarterly visual assessments (see Part 3.2.4.4), benchmark monitoring (see Part 4.2.2.4), and/or impaired waters monitoring (see Part 4.2.5.2).

7. Reporting and Recordkeeping

7.1 Electronic Reporting Requirement

You must submit all NOIs, NOTs, NECs, Annual Reports, Discharge Monitoring Reports (DMRs), and other reporting information as appropriate electronically, unless the EPA Regional Office grants you a waiver based on one of the following conditions:

- If your headquarters is physically located in a geographic area (i.e., zip code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or
- If you have limitations regarding available computer access or computer capability.

Waivers are only granted for a one-time use for a single information submittal, e.g., an initial waiver for an NOI does not apply for the entire term of the permit for other forms. If you need to submit information on paper after your first waiver, you must apply for a new waiver. The EPA Regional Office may extend a wavier on a case-by-case basis.

If you wish to obtain a waiver from submitting a report electronically, you must submit a request to the applicable EPA Regional Office, found in Part 7.9. In that request you must document which exemption you meet, provide evidence supporting any claims, and a copy of your completed paper form. A waiver may only be considered granted once you receive written confirmation from EPA or its authorized representative.

7.2 Submitting Information to EPA

7.2.1 Submitting Forms via NeT-MSGP. You must submit all required information via EPA's electronic NPDES eReporting tool (NeT), unless the permit states otherwise or unless you have been granted a waiver per Part 7.1. You can both prepare and submit required information in NeT-MSGP using specific forms, also found in the permit's appendices. To access NeT-MSGP, go to https://cdxnodengn.epa.gov/net-msgp/action/login.

Information you must submit to EPA via NeT-MSGP:

- Notice of Intent (NOI) (Part 1.3);
- Change Notice of Intent (NOI) (Part 1.3.4);

- No Exposure Certification (NEC) (Part 1.5);
- Notice of Termination (NOT) (Part 1.4); and
- Annual Report (AR) (Part 7.4).

Note: You must submit Discharge Monitoring Reports (see Part 7.3) electronically using Net-DMR.

If the applicable EPA Regional Office grants you a waiver from electronic reporting, you must use the required forms found in the Appendices.

7.2.2 **Other Information Required to be Submitted.** Information required to be submitted to the applicable EPA Regional Office at the address in Part 7.8:

- New Dischargers and New Sources to Water Quality-Impaired Waters (Part 1.1.6.2);
- Exceedance Report for Numeric Effluent Limitations (Part 7.5); and
- Additional Reporting (Part 7.6)

7.3 Reporting Monitoring Data to EPA

7.3.1 **Submitting Monitoring Data via NeT-DMR.** You must submit all stormwater discharge monitoring data collected pursuant to Part 4 to EPA using Net-DMR, EPA's electronic DMR system (for more information visit: https://www.epa.gov/compliance/npdes-ereporting (unless the applicable EPA Regional Office grants you a waiver from electronic reporting, in which case you may submit a paper DMR form) no later than 30 days after you have received your complete laboratory results for all monitoring discharge points for the reporting period. Your monitoring requirements (i.e., parameters required to be monitored and sample frequency) will be prepopulated on your electronic Discharge Monitoring Report (DMR) form based on the information you reported on your NOI form through the NeT-MSGP. Accordingly, you must certify the following changes to your monitoring frequency to EPA by submitting a Change NOI in NeT-MSGP, unless EPA has completed the development of planned features in the electronic systems to process submitted monitoring results to automatically turn monitoring on/off as applicable, which will trigger changes to your monitoring requirements in Net-DMR:

7.3.1.1 All benchmark monitoring requirements have been fulfilled for the permitterm;

7.3.1.2 All impaired waters monitoring requirements have been fulfilled for the permit term;

7.3.1.3 Benchmark monitoring requirements no longer apply because the EPA Regional Office has concurred with your assessment that run-on from a neighboring source is the cause of the exceedance;

7.3.1.4 Benchmark and/or impaired monitoring requirements no longer apply because your facility is inactive and unstaffed;

7.3.1.5 Benchmark and/or impaired monitoring requirements now apply because your facility has changed from inactive and unstaffed to active and staffed;

7.3.1.6 For Sector G2 only: Discharges from waste rock and overburden piles have exceeded benchmark thresholds;

7.3.1.7 A numeric effluent limitation guideline has been exceeded;

7.3.1.8 A numeric effluent limitation guideline exceedance is back in compliance.

7.3.2 **When You Can Discontinue Submission of Monitoring Data.** Once you have completely fulfilled applicable monitoring requirements, you are no longer required to report monitoring results using Net-DMR. If you have only partially fulfilled your benchmark monitoring and/or impaired waters monitoring requirements (e.g., your four quarterly average is below the benchmark for some, but not all, parameters; you did not detect some, but not all, impairment pollutants), you must continue to report your results in Net-DMR for the remaining monitoring requirements. If the EPA Regional Office grants you a waiver per Part 7.1, you must submit paper reporting forms by the same deadline.

7.3.3 **State or Tribal Required Monitoring Data.** See Part 9 for specific reporting requirements applicable to individual states or tribes.

7.3.4 **Submission Deadline for Indicator and Benchmark Monitoring Data.** For both indicator and benchmark monitoring, you are required to submit sampling results to EPA no later than 30 days after receiving your complete laboratory results for all monitored discharge points for each monitoring period that you are required to collect samples, per Part 4.2.1. and Part 4.2.2. If you collect samples during multiple storm events in a single quarter (e.g., due to adverse weather conditions, climates with irregular stormwater discharges, or areas subject to snow), you are required to submit all sampling results for each storm event to EPA within 30 days of receiving all laboratory results for the event. Or, for any of your monitored discharge points that did not have a discharge within the reporting period, using Net-DMR, you must report that no discharges occurred for that discharge point no later than 30 days after the end of the reporting period.

7.4 Annual Report

You must submit an Annual Report to EPA via NeT-MSGP, per Part 7.2, by January 30th for each year of permit coverage containing information generated from the past calendar year. You must include the following information in the Annual Report:

7.4.1 A summary of your past year's routine facility inspection documentation required (Part 3.1.6). In addition, if you are an operator of an airport facility (Sector S) that is subject to the airport effluent limitations guidelines and are complying with the Part 8.S.8.1 effluent limitation through the use of non-urea-containing deicers, provide a statement certifying that you do not use pavement deicers containing urea. (Note: Operators of airport facilities that are complying with Part 8.S.8.1 by meeting the numeric effluent limitation for ammonia do not need to include this statement.)

7.4.2 A summary of your past year's visual assessment documentation (see Part 3.2.3);

7.4.3 A summary of your past year's corrective action and any required AIM documentation (see Part 5.3). If you have not completed required corrective action or AIM responses at the time you submit your annual report, you must describe the status of any outstanding corrective action(s) or AIM responses. Also describe any incidents of noncompliance in the past year or currently ongoing, or if none, provide a statement that you are in compliance with the permit.

Your Annual Report must also include a statement, signed and certified in accordance with Appendix B, Subsection 11.

7.5 Numeric Effluent Limitations Exceedance Report

If follow-up monitoring per Part 4.2.3.3 exceeds a numeric effluent limit, you must submit an Exceedance Report to EPA no later than 30 days after you have received your laboratory results. Send the Exceedance Report to the applicable EPA Regional Office listed in Part 7.8, and report the monitoring data through Net-DMR. Your report must include the following:

7.5.1 NPDES ID;

7.5.2 Facility name, physical address and location;

7.5.3 Name of receiving water;

7.5.4 Monitoring data from this and the preceding monitoring event(s);

7.5.5 An explanation of the situation, including what you have done and intend to do (should your corrective actions not yet be complete) to correct the violation;

7.5.6 An appropriate contact name and phone number.

7.6 Additional Standard Recordkeeping and Reporting Requirements

In addition to the reporting requirements stipulated in Part 7, you are also subject to the standard permit reporting provisions of Appendix B, Subsection 12. You must submit the following reports to the applicable EPA Regional Office listed in Part 7.8, as applicable. If you discharge through an MS4, you must also submit these reports to the MS4 operator (identified pursuant to Part 6.2.2).

7.6.1 24-hour reporting (see Appendix B, Subsection 12.F) – You must report any noncompliance which may endanger health or the environment. Any information must be provided orally within 24 hours from the time you become aware of the circumstances;

7.6.2 5-day follow-up reporting to the 24-hour reporting (see Appendix B, Subsection 12.F) – A written submission must also be provided within five days of the time you become aware of the circumstances;

7.6.3 Reportable quantity spills (see Part 2.1.2.4) – You must provide notification, as required under Part 2.1.2.4, as soon as you have knowledge of a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity;

7.6.4 Planned changes (see Appendix B, Subsection 12.A) – You must give notice to EPA promptly, no fewer than 30 days prior to making any planned physical alterations or additions to the permitted facility that qualify the facility as a new source or that could significantly change the nature or significantly increase the quantity of pollutants discharged;

7.6.5 Anticipated noncompliance (see Appendix B, Subsection 12.B) – You must give advance notice to EPA of any planned changes in the permitted facility or activity which you anticipate will result in noncompliance with permit requirements;

7.6.6 Compliance schedules (see Appendix B, Subsection 12.F) – Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements

contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date;

7.6.7 Other noncompliance (see Appendix B, Subsection 12.G) – You must report all instances of noncompliance not reported in your Annual Report, compliance schedule report, or 24-hour report at the time monitoring reports are submitted; and

7.6.8 Other information (see Appendix B, Subsection 12.H) – You must promptly submit facts or information if you become aware that you failed to submit relevant facts in your NOI, or that you submitted incorrect information in your NOI or in any report.

7.7 Record Retention Requirements

You must retain copies of your SWPPP (including any modifications made during the term of this permit), additional documentation requirements pursuant to Part 6.5 (including documentation related to any corrective actions or AIM responses taken pursuant to Part 5), all reports and certifications required by this permit, monitoring data, and records of all data used to complete the NOI to be covered by this permit, for a period of at least three years from the date that your coverage under this permit expires or is terminated.

7.8 Addresses for Reports

Permit Part	EPA Region	Areas Covered	Address
7.8.1	1	Connecticut Massachusetts New Hampshire Rhode Island Vermont	U.S. EPA Region 1 Water Division Stormwater and Construction Permits Section 5 Post Office Square, Ste. 100 (06-1) Boston, MA 02109-3912
7.8.2	2	New Jersey New York	U.S. EPA Region 2 NPDES Stormwater Program 290 Broadway, 24th Floor New York, NY 10007-1866
		Puerto Rico Virgin Islands	U.S. EPA Region 2 Caribbean Environmental Protection Division NPDES Stormwater Program City View Plaza II – Suite 7000 48 Rd. 165 Km 1.2 Guaynabo, PR 00968-8069
7.8.3	3	Delaware District of Columbia Maryland Pennsylvania Virginia West Virginia	U.S. EPA Region 3 NPDES Permits Section, MC 3WD41 1650 Arch Street Philadelphia, PA 19103
7.8.4	4	Alabama Florida Georgia Kentucky Mississippi North Carolina	U.S. EPA Region 4 Water Division NPDES Stormwater Program Atlanta Federal Center 61 Forsyth Street SW Atlanta, GA 30303-3104

Permit Part	EPA Region	Areas Covered	Address
		South Carolina Tennessee	
7.8.5	5	Illinois Indiana Michigan Minnesota Ohio Wisconsin	U.S. EPA Region 5 NPDES Program Branch 77 W. Jackson Blvd. MC WP16J Chicago, IL 60604-3507
7.8.6	6	Arkansas Louisiana Oklahoma Texas New Mexico (except see Region 9 for Navajo lands, and see Region 8 for Ute Mountain Reservation lands)	U.S. EPA Region 6 Permitting Section (WD-PE) 1201 Elm Street, Suite 500 Dallas, TX 75270
7.8.7	7	Iowa Kansas Missouri Nebraska	U.S. EPA Region 7 NPDES Stormwater Program 11201 Renner Blvd Lenexa, KS 66219
7.8.8	8	Colorado Montana North Dakota South Dakota Wyoming Utah (except see Region 9 for Goshute Reservation and Navajo Reservation lands) The Ute Mountain Reservation in New Mexico The Pine Ridge Reservation in Nebraska	EPA Region 8 Storm Water Program MC: 8P-W-WW 1595 Wynkoop Street Denver, CO 80202-1129

Permit Part	EPA Region	Areas Covered	Address
7.8.9	9	Arizona California Hawaii Nevada Guam American Samoa The Commonwealth of the Northern Mariana Islands The Goshute Reservation in Utah and Nevada The Navajo Reservation in Utah New Mexico, and Arizona The Duck Valley Reservation in Idaho Fort McDermitt Reservation in Oregon	U.S. EPA Region 9 Water Division NPDES Stormwater Program (WTR-2-3) 75 Hawthorne Street San Francisco, CA 94105-3901
7.8.10	10	Alaska Idaho Oregon (except see Region 9 for Fort McDermitt Reservation) Washington	U.S. EPA Region 10 Water Division NPDES Stormwater Program (19-C04) 1200 6th Avenue, Suite 155 Seattle, WA 98101-3188
7.8.11	State and Tribal Addresses		See Part 9 (states and tribes) for the addresses of applicable states or tribes that require submission of information to their agencies.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart A – Sector A – Timber Products

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.A.1 Covered Stormwater Discharges

The requirements in Subpart A apply to stormwater discharges associated with industrial activity from Timber Products facilities as identified by the SIC Codes specified under Sector A in Table D-1 of Appendix D of the permit.

8.A.2 Limitations on Coverage

8.A.2.1 ***Prohibition of Discharges.*** (See also Part 1.1.3) Not covered by this permit: stormwater discharges from areas where there may be contact with the chemical formulations sprayed to provide surface protection. These discharges must be covered by a separate NPDES permit.

8.A.2.2 ***Authorized Non-Stormwater Discharges.*** (See also Part 1.2.2) Also authorized by this permit, provided the non-stormwater component of the discharge is in compliance with the requirements in Part 2.1.2 (Non-Numeric Effluent Limits): discharges from the spray down of lumber and wood product storage yards where no chemical additives are used in the spray-down waters and no chemicals are applied to the wood during storage.

8.A.3 Additional Technology-Based Effluent Limits

8.A.3.1 ***Good Housekeeping.*** (See also Part 2.1.2.2) In areas where storage, loading and unloading, and material handling occur, perform good housekeeping to minimize the discharge of wood debris, leachate generated from decaying wood materials, and the generation of dust.

8.A.4 Additional SWPPP Requirements

8.A.4.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: processing areas, treatment chemical storage areas, treated wood and residue storage areas, wet decking areas, dry decking areas, untreated wood and residue storage areas, and treatment equipment storage areas.

8.A.4.2 ***Inventory of Exposed Materials***. (See also Part 6.2.3.2) Where such information exists, if your facility has used chlorophenolic, creosote, or chromium-copper-arsenic formulations for wood surface protection or preserving, document in your SWPPP the following: areas where contaminated soils, treatment equipment, and stored materials still remain and the management practices employed to minimize the contact of these materials with stormwater.

8.A.4.3 ***Description of Stormwater Management Controls.*** (See also Part 6.2.4) Document measures implemented to address the following activities and sources: log, lumber, and wood product storage areas; residue storage areas; loading and unloading

areas; material handling areas; chemical storage areas; and equipment and vehicle maintenance, storage, and repair areas. If your facility performs wood surface protection and preservation activities, address the specific control measures, including any BMPs, for these activities.

8.A.5 Additional Inspection Requirements. (See also Part 3.1)

If your facility performs wood surface protection and preservation activities, inspect processing areas, transport areas, and treated wood storage areas monthly to assess the usefulness of practices to minimize the deposit of treatment chemicals on unprotected soils and in areas that will come in contact with stormwater discharges.

8.A.6 Indicator Monitoring (See also Part 4.2.1)

Table 8.A-1 identifies indicator monitoring that applies to the specific subsectors of Sector A. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.A-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector A (Subsectors A1, A2, A3, and A4) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Applies to all Sector A (Subsectors A1, A2, A3, and A4) facilities that manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.A.7 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.A-2 identifies benchmarks that apply to the specific subsectors of Sector A. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.A-2		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector A1. General Sawmills and Planing Mills (SIC 2421)	Chemical Oxygen Demand (COD)	120.0 mg/L
	Total Suspended Solids (TSS)	100 mg/L
	Total Recoverable Zinc (freshwater)[1]	Hardness Dependent
	Total Recoverable Zinc (saltwater)[2]	90 µg/L
Subsector A2. Wood Preserving (SIC 2491)	Total Recoverable Arsenic (freshwater)	150 µg/L
	Total Recoverable Arsenic (saltwater)[1]	69 µg/L
	Total Recoverable Copper (freshwater)	5.19 µg/L
	Total Recoverable Copper (saltwater)[2]	4.8 µg/L
Subsector A3. Log Storage and Handling (SIC 2411)	Total Suspended Solids (TSS)	100 mg/L
Subsector A4. Hardwood Dimension and Flooring Mills; Special Products Sawmills, not elsewhere classified; Millwork, Veneer, Plywood, and Structural Wood; Wood Pallets and Skids; Wood Containers, not elsewhere classified; Wood Buildings and Mobile Homes; Reconstituted Wood Products; and Wood Products Facilities not elsewhere classified (SIC 2426, 2429, 2431-2439 (except 2434), 2441, 2448, 2449, 2451, 2452, 2493, and 2499)	Chemical Oxygen Demand (COD)	120.0 mg/L
	Total Suspended Solids (TSS)	100.0 mg/L

[1] The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	Zinc
0-24.99 mg/L	37
25-49.99 mg/L	52
50-74.99 mg/L	80
75-99.99 mg/L	107
100-124.99 mg/L	132
125-149.99 mg/L	157
150-174.99 mg/L	181
175-199.99 mg/L	204
200-224.99 mg/L	227

225-249.99 mg/L	249
250+ mg/L	260

[2] Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.

8.A.8 Effluent Limitations Based on Effluent Limitations Guidelines. (See also Part 4.2.3)

Table 8.A-3 identifies effluent limits that apply to the industrial activities described below.

Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.A-3[1]

Industrial Activity	Paramete	Effluent Limitation
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas	pH	6.0 - 9.0 s.u
	Debris (woody material such as bark, twigs, branches, heartwood, or sapwood)	No discharge of debris that will not pass through a 2.54-cm (1-in.) diameter round

[1] Monitor annually.

8.A.8.1 ***Credit for Pollutants in Intake Water.*** For discharges that are comprised solely of water drawn from the same body of water into which the discharges flow and that exceed an applicable effluent limitation, you may be eligible for a credit to the extent necessary to meet the limitation. To obtain this credit, you must show that your discharge would meet the limitation in the absence of the pollutant(s) in the intake water by demonstrating that the control measures you use to meet the limitation would, if properly installed and operated, meet the limitations for the pollutant (i.e., the pollutant level in your discharge is in exceedance of the limitation due to the pollutant concentration in the source or intake water). You must consult the appropriate EPA Regional Office for guidance in seeking a pollutant credit under this Part. EPA will notify you whether you are eligible for the credit, and, if so, provide the scope of such credit.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart B – Sector B – Paper and Allied Products

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.B.1 Covered Stormwater Discharges

The requirements in Subpart B apply to stormwater discharges associated with industrial activity from Paper and Allied Products Manufacturing facilities, as identified by the SIC Codes specified under Sector B in Table D-1 of Appendix D of the permit.

8.B.2 Indicator Monitoring (See also Part 4.2.1)

Table 8.B-1 identifies indicator monitoring that applies to the specific subsectors of Sector B. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.B-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector B (Subsectors B1 and B2) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector B2. Pulp Mills (SIC Code 2611); Paper Mills (SIC Code 2621); Paperboard Containers and Boxes (SIC Code 2652-2657); Converted Paper and Paperboard Products, Except Containers and Boxes (SIC Code 2671-2679)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.B.3 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.B-2 identifies benchmarks that apply to the specific subsectors of Sector B. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.B-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector B1. Paperboard Mills (SIC Code 2631)	Chemical Oxygen Demand (COD)	120 mg/L

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart C – Sector C – Chemical and Allied Products Manufacturing, and Refining

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.C.1 Covered Stormwater Discharges

The requirements in Subpart C apply to stormwater discharges associated with industrial activity from Chemical and Allied Products Manufacturing, and Refining facilities, as identified by the SIC Codes specified under Sector C in Table D-1 of Appendix D of the permit.

8.C.2 Limitations on Coverage

8.C.2.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) The following are not covered by this permit: non-stormwater discharges containing inks, paints, or substances (hazardous, nonhazardous, etc.) resulting from an onsite spill, including materials collected in drip pans; wash water from material handling and processing areas; and wash water from drum, tank or container rinsing and cleaning. (EPA includes this prohibited non-stormwater discharge here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.C.3 Indicator Monitoring (See also Part 4.2.1)

Table 8.C-1 identifies indicator monitoring that applies to the specific subsectors of Sector C. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.C-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector C (Subsectors C1, C2, C3, C4, and C5) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

Table 8.C-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Subsector C5. Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; in vitro and in vivo Diagnostic Substances; and Biological Products, Except Diagnostic Substances (SIC Code 2833-2836); Paints, Varnishes, Lacquers, Enamels, and Allied Products (SIC Code 2851); Industrial Organic Chemicals (SIC Code 2861-2869); Miscellaneous Chemical Products (SIC Code 2891-2899); Inks and Paints, Including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors (SIC Code 3952 (limited to list of inks and paints)); Petroleum Refining (SIC Code 2911)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values
Subsector C5. Petroleum Refining (SIC Code 2911)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.C.4 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.C-2 identifies benchmarks that apply to the specific subsectors of Sector C. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.C-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector C1. Agricultural Chemicals (SIC 2873-2879)	Nitrate plus Nitrite Nitrogen	0.68 mg/L
	Total Recoverable Lead (freshwater)[2] Total Recoverable Lead (saltwater)[1]	Hardness Dependent 210 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L
	Total Phosphorus	2.0 mg/L

Table 8.C-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector C2. Industrial Inorganic Chemicals (SIC 2812-2819)	Total Recoverable Aluminum	1,100 µg/L
	Nitrate plus Nitrite Nitrogen	0.68 mg/L
Subsector C3. Soaps, Detergents, Cosmetics, and Perfumes (SIC 2841-2844)	Nitrate plus Nitrite Nitrogen	0.68 mg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L
Subsector C4. Plastics, Synthetics, and Resins (SIC 2821-2824)	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L

[1] Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.

[2] The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	**Lead** (µg/L)	**Zinc** (µg/L)
0-24.99 mg/L	14	37
25-49.99 mg/L	24	52
50-74.99 mg/L	45	80
75-99.99 mg/L	69	107
100-124.99 mg/L	95	132
125-149.99 mg/L	123	157
150-174.99 mg/L	152	181
175-199.99 mg/L	182	204
200-224.99 mg/L	213	227
225-249.99 mg/L	246	249
250+ mg/L	262	260

8.C.5 Effluent Limitations Based on Effluent Limitations Guidelines (See also Part4.2.3.1)

Table 8.C-3 identifies effluent limits that apply to the industrial activities described below.

Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.C-3[1]		
Industrial Activity	**Parameter**	**Effluent**
Runoff from phosphate fertilizer manufacturing facilities that comes into contact with any raw materials, finished product, by-products or waste products (SIC 2874)	Total Phosphorus (as P)	105.0 mg/L, daily maximum
		35 mg/L, 30-day avg.
	Fluoride	75.0 mg/L, daily maximum
		25.0 mg/L, 30-day avg.

[1] Monitor annually.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart D – Sector D – Asphalt Paving and Roofing Materials and Lubricant Manufacturing

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.D.1 Covered Stormwater Discharges

The requirements in Subpart D apply to stormwater discharges associated with industrial activity from Asphalt Paving and Roofing Materials and Lubricant Manufacturing facilities, as identified by the SIC Codes specified under Sector D in Table D-1 of Appendix D of the permit.

8.D.2 Limitations on Coverage

The following stormwater discharges associated with industrial activity are not authorized by this permit (see also Part 1.1.3):

8.D.2.1 ***Stormwater discharges from petroleum refining facilities, including those that manufacture asphalt or asphalt products, that are subject to nationally established effluent limitation guidelines found in 40 CFR Part 419 (Petroleum Refining).***

The following stormwater discharges associated with industrial activity are not authorized under Sector D:

8.D.2.2 ***Stormwater discharges from oil recycling facilities, which are covered under Sector N*** (see Part 8.N); and

8.D.2.3 ***Stormwater discharges associated with fats and oils rendering, which are covered under Sector U*** (see Part 8.U).

8.D.3 Indicator Monitoring (See also Part 4.2.1)

Table 8.D-1 identifies indicator monitoring that applies to the specific subsectors of Sector D. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.D-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector D (Subsectors D1 and D2) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector D1. Asphalt Paving and Roofing Materials (SIC Code 2951, 2952)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

Table 8.D-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Subsector D2. Miscellaneous Products of Petroleum and Coal (SIC Code 2992, 2999)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values
	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.D.4 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.D-2 identifies benchmarks that apply to the specific subsectors of Sector D. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.D-2.		
Subsector	**Parameter**	**Benchmark Monitoring Concentration**
Subsector D1. Asphalt Paving and Roofing Materials (SIC 2951, 2952)	Total Suspended Solids (TSS)	100 mg/L

8.D.5 Effluent Limitations Based on Effluent Limitations Guidelines (See also Part 4.2.3.1)

Table 8.D-3 identifies effluent limitations that apply to the industrial activities described below. Compliance with these effluent limitations is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.D-3[1]		
Industrial Activity	**Parameter**	**Effluent Limitation**
Discharges from asphalt emulsion facilities.	Total Suspended Solids (TSS)	23.0 mg/L, daily maximum 15.0 mg/L, 30-day avg.
	pH	6.0 - 9.0 s.u.
	Oil and Grease	15.0 mg/L, daily maximum
		10 mg/L, 30-day avg.

[1]Monitor annually.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart E – Sector E – Glass, Clay, Cement, Concrete, and Gypsum Products

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.E.1 Covered Stormwater Discharges

The requirements in Subpart E apply to stormwater discharges associated with industrial activity from Glass, Clay, Cement, Concrete, and Gypsum Products facilities, as identified by the SIC Codes specified under Sector E in Table D-1 of Appendix D of the permit.

8.E.2 Additional Technology-Based Effluent Limits

8.E.2.1 ***Good Housekeeping Measures.*** (See also Part 2.1.2.2) As part of your good housekeeping program, prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), kiln dust, fly ash, settled dust, or other significant material in stormwater from paved portions of the site that are exposed to stormwater. Sweep or vacuum paved surfaces of the site that are exposed to stormwater at regular intervals or use other equivalent measures (e.g., wash down the area and collect and/or treat and properly dispose of the washdown water) to minimize the potential discharge of these materials in stormwater. Indicate in your SWPPP the frequency of sweeping, vacuuming or other equivalent measures. Determine the frequency based on the amount of industrial activity occurring in the area and the frequency of precipitation, but it must be performed at least once a week in areas where cement, aggregate, kiln dust, fly ash or settled dust are being handled or processed and may be discharged in stormwater. You must also prevent the exposure of fine granular solids (e.g., cement, fly ash, kiln dust) to stormwater, where practicable, by storing these materials in enclosed silos, hoppers, buildings or under other covering.

8.E.3 Additional SWPPP Requirements

8.E.3.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in the SWPPP the locations of the following, as applicable: bag house or other dust control device; recycle/ sedimentation pond, clarifier, or other device used for the treatment of process wastewater; and the areas that drain to the treatment device.

8.E.3.2 ***Discharge Testing.*** (See also Part 6.2.3.4) For facilities producing ready-mix concrete, concrete block, brick, or similar products, include in the non-stormwater discharge testing a description of measures that ensure that process wastewaters resulting from washing trucks, mixers, transport buckets, forms, or other equipment are discharged in accordance with NPDES wastewater permit requirements or are recycled.

8.E.4 Indicator Monitoring. (See also Part 4.2.1)

Table 8.E-1 identifies indicator monitoring that applies to the specific subsectors of Sector E. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.E-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Applies to all Sector E (Subsectors E1, E2, and E3) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during your coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector E3. Flat Glass (SIC Code 3211); Glass and Glassware, Pressed or Blown (SIC Code 3221, 3229); Glass Products Made of Purchased Glass (SIC Code 3231); Hydraulic Cement (SIC Code 3241); Cut Stone and Stone Products (SIC Code 3281); Abrasive, Asbestos, and Miscellaneous Nonmetallic Mineral Products (SIC Code 3291-3299)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.E.5 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.E-2 identifies benchmarks that apply to the specific subsectors of Sector E. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.E-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector E1. Clay Product Manufacturers (SIC 3251-3259, 3261-3269)	Total Recoverable Aluminum	1,100 µg/L
Subsector E2. Concrete and Gypsum Product Manufacturers (SIC 3271-3275)	Total Suspended Solids (TSS)	100 mg/L

8.E.6 Effluent Limitations Based on Effluent Limitations Guidelines (See also Part 4.2.3.1)

Table 8.E-3 identifies effluent limits that apply to the industrial activities described below.

Compliance with these limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.E-3[1]		
Industrial Activity	**Parameter**	**Effluent Limitation**
Discharges from material storage piles at cement manufacturing facilities (SIC 3241)	Total Suspended Solids (TSS)	50 mg/L, daily maximum[2]
	pH	6.0 - 9.0 s.u.[2]

[1] Monitor annually.

[2] Any untreated overflow from facilities designed, constructed and operated to treat the volume of stormwater from materials storage piles which is associated with a 10-year, 24-hour rainfall event shall not be subject to the pH and TSS limitations (40 CFR 411.32(b)).

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart F – Sector F – Primary Metals

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.F.1 Covered Stormwater Discharges

The requirements in Subpart F apply to stormwater discharges associated with industrial activity from Primary Metals facilities, as identified by the SIC Codes specified under Sector F in Table D-1 of Appendix D of the permit.

8.F.2 Additional Technology-Based Effluent Limits

8.F.2.1 ***Good Housekeeping Measures.*** (See also Part 2.1.2.2) As part of your good housekeeping program, you must implement a cleaning and maintenance program for all impervious areas of the facility where particulate matter, dust or debris may accumulate to minimize the discharge of pollutants in stormwater. The cleaning and maintenance program must encompass, as appropriate, areas where material loading and unloading, storage, handling and processing occur.

Stabilize unpaved areas using vegetation or paving where there is vehicle traffic or where material loading and unloading, storage, handling and processing occurs, unless feasible.

For paved areas of the facility where particulate matter, dust or debris may accumulate, to minimize the discharge of pollutants in stormwater, implement control measures such as the following, where determined to be feasible (list not exclusive): sweeping or vacuuming at regular intervals; and washing down the area and collecting and/or treating and properly disposing of the washdown water. For unstabilized areas or for stabilized areas where sweeping, vacuuming, or washing down is not possible, to minimize the discharge of particulate matter, dust, or debris or other pollutants in stormwater, implement stormwater management devices such as the following, where determined to be feasible (list not exclusive): sediment traps, vegetative buffer strips, filter fabric fence, sediment filtering boom, gravel outlet protection, and other equivalent measures that effectively trap or remove sediment.

8.F.3 Additional SWPPP Requirements

8.F.3.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Identify in the SWPPP where any of the following activities may be exposed to precipitation or stormwater: storage or disposal of wastes such as spent solvents and baths, sand, slag and dross; liquid storage tanks and drums; processing areas including pollution control equipment (e.g., baghouses); and storage areas of raw material such as coal, coke, scrap, sand, fluxes, refractories or metal in any form. In addition, indicate where an accumulation of significant amounts of particulate matter could occur from such sources as furnace or oven emissions, losses from coal and coke handling operations, etc., and could result in a discharge of pollutants in stormwater.

8.F.3.2 ***Inventory of Exposed Material.*** (See also Part 6.2.3) Include in the inventory of materials handled at the site that potentially may be exposed to precipitation or

stormwater: areas where there is the potential for deposition of particulate matter from process air emissions or losses during material-handling activities.

8.F.4 Additional Inspection Requirements (See also Part 3.1)

As part of conducting your routine facility inspections at least quarterly (Part 3.1), address all potential sources of pollutants, including (if applicable) air pollution control equipment (e.g., baghouses, electrostatic precipitators, scrubbers, cyclones), for any signs of degradation (e.g., leaks, corrosion, improper operation) that could limit their efficiency and lead to excessive emissions. Consider monitoring air flow at inlets and outlets (or use equivalent measures) to check for leaks (e.g., particulate deposition) or blockage in ducts. Also inspect all process and material handling equipment (e.g., conveyors, cranes and vehicles) for leaks, drips, or the potential loss of material; and material storage areas (e.g., piles, bins, or hoppers for storing coke, coal, scrap or slag, as well as chemicals stored in tanks and drums) for signs of material losses due to wind or stormwater.

8.F.5 Indicator Monitoring (See also Part 4.2.1)

Table 8.F-1 identifies indicator monitoring that applies to the specific subsectors of Sector F. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.F-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector F (Subsectors F1, F2, F3, F4, and F5) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector F1. Steel Works, Blast Furnaces, and Rolling and Finishing Mills (SIC Code 3312-3317)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector F2. Iron and Steel Foundries (SIC Code 3321-3325)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector F3. Rolling, Drawing, and Extruding of Nonferrous Metals (SIC Code 3351-3357)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector F4. Nonferrous Foundries (Castings) (SIC Code 3363-3369)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

Table 8.F-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Subsector F5. Primary Smelting and Refining of Nonferrous Metals (SIC Code 3331-3339); Secondary Smelting and Refining of Nonferrous Metals (SIC Code 3341); Miscellaneous Primary Metal Products (SIC Code 3398, 3399)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values
	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.F.6 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.F-2 identifies benchmarks that apply to the specific subsectors of Sector F. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.F-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector F1. Steel Works, Blast Furnaces, and Rolling and Finishing Mills (SIC 3312-3317)	Total Recoverable Aluminum	1,100 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L
Subsector F2. Iron and Steel Foundries (SIC 3321-3325)	Total Recoverable Aluminum	1,100 µg/L
	Total Suspended Solids (TSS)	100 mg/L
	Total Recoverable Copper (freshwater) Total Recoverable Copper (saltwater)[1]	5.19 µg/L 4.8 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L

Table 8.F-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector F3. Rolling, Drawing, and Extruding of Nonferrous Metals (SIC 3351-3357)	Total Recoverable Copper (freshwater) Total Recoverable Copper (saltwater)[1]	5.19 µg/L 4.8 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L
Subsector F4. Nonferrous Foundries (SIC 3363-3369)	Total Recoverable Copper (freshwater) Total Recoverable Copper (saltwater)[1]	5.19 µg/L 4.8 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L

[1] Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.

[2] The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	**Zinc**
0-24.99 mg/L	37
25-49.99 mg/L	52
50-74.99 mg/L	80
75-99.99 mg/L	107
100-124.99 mg/L	132
125-149.99 mg/L	157
150-174.99 mg/L	181
175-199.99 mg/L	204
200-224.99 mg/L	227
225-249.99 mg/L	249
250+ mg/L	260

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart G – Sector G – Metal Mining

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

Note: Where compliance with a requirement in a separate exploration permit, mining permit, reclamation plan, Surface Mining Control and Reclamation Act (SMCRA) requirements, etc. will result in you fully meeting any requirement in this Subpart, you are considered to have complied with the relevant requirement in this Subpart. You must include documentation in your SWPPP describing your rationale for concluding that any particular action on your part is sufficient to comply with the corresponding requirement in this Subpart.

8.G.1 Covered Stormwater Discharges

The requirements in Subpart G apply to stormwater discharges associated with industrial activity from Metal Mining facilities, including mines abandoned on Federal lands, as identified by the SIC Codes specified under Sector G in Table D-1 of Appendix D. Coverage is required for metal mining facilities that discharge stormwater contaminated by contact with, or that has come into contact with, any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the operation.

8.G.1.1 ***Covered Discharges from Inactive Facilities.*** All stormwater discharges.

8.G.1.2 ***Covered Discharges from Active and Temporarily Inactive Facilities.*** Only the stormwater discharges from the following areas are covered:

- Waste rock and overburden piles if composed entirely of stormwater and not combined with mine drainage;
- Topsoil piles;
- Offsite haul and access roads;
- Onsite haul and access roads constructed of waste rock, overburden or spent ore if composed entirely of stormwater and not combining with mine drainage;
- Onsite haul and access roads not constructed of waste rock, overburden or spent ore except if mine drainage is used for dust control;
- Discharges from tailings dams or dikes when not constructed of waste rock or tailings and no process fluids are present;
- Discharges from tailings dams or dikes when constructed of waste rock or tailings and no process fluids are present, if composed entirely of stormwater and not combining with mine drainage;
- Concentration building if no contact with material piles;
- Mill site if no contact with material piles;
- Office or administrative building and housing if mixed with stormwater from industrial area;
- Chemical storage area;

- Docking facility if no excessive contact with waste product that would otherwise constitute mine drainage;
- Explosive storage;
- Fuel storage;
- Vehicle and equipment maintenance area and building;
- Parking areas (if necessary);
- Power plant;
- Truck wash areas if no excessive contact with waste product that would otherwise constitute mine drainage;
- Unreclaimed, disturbed areas outside of active mining area;
- Reclaimed areas released from reclamation requirements prior to December 17, 1990;
- Partially or inadequately reclaimed areas or areas not released from reclamation requirements.

8.G.1.3 ***Covered Discharges from Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*** All stormwater discharges.

8.G.1.4 ***Covered Discharges from Facilities Undergoing Reclamation.*** All stormwater discharges.

8.G.2 **Limitations on Coverage**

8.G.2.1 ***Prohibition of Stormwater Discharges.*** Stormwater discharges not authorized by this permit: discharges from active metal mining facilities that are subject to effluent limitation guidelines for the Ore Mining and Dressing Point Source Category (40 CFR Part 440).

Note: Stormwater discharges from these sources are subject to 40 CFR Part 440 if they are mixed with other discharges subject to Part 440. In this case, they are not eligible for coverage under this permit. Discharges from overburden/waste rock and overburden/waste rock-related areas are not subject to 40 CFR Part 440 unless they: drain naturally (or are intentionally diverted) to a point source; and (2) combine with "mine drainage" that is otherwise regulated under the Part 440 regulations. For such sources, coverage under this permit would be available if the discharge composed entirely of stormwater does not combine with other sources of mine drainage that are not subject to 40 CFR Part 440, and meets the other eligibility criteria contained in Part 1.1 of the permit. Operators bear the initial responsibility for determining if they are eligible for coverage under this permit, or must seek coverage under another NPDES permit. EPA recommends that operators contact the relevant NPDES permit issuance authority for assistance to determine the nature and scope of the "active mining area" on a mine-by-mine basis, as well as to determine the appropriate permitting mechanism for authorizing such discharges.

8.G.2.2 ***Prohibition of Non-Stormwater Discharges.*** Not authorized by this permit: adit drainage, and contaminated springs or seeps discharging from waste rock dumps that do not directly result from precipitation events (see also the standard Limitations on Coverage in Part 1.1.3). (EPA includes these prohibited non-stormwater discharges

here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2)

8.G.3 Definitions

The following definitions are not intended to supersede the definitions of active and inactive mining facilities established by 40 CFR 122.26(b)(14)(iii).

8.G.3.1 ***Mining operations.*** For this permit, mining operations are grouped into two distinct categories, with distinct effluent limits and requirements applicable to each: a) earth-disturbing activities conducted prior to active mining activities); and b) active mining activities, which includes reclamation. "Mining operations" can occur at both inactive mining facilities and temporarily inactive mining facilities.

8.G.3.2 ***Earth-disturbing activities conducted prior to active mining activities.*** Consists of two classes of earth-disturbing (i.e., clearing, grading and excavation) activities:

- **a.** activities performed for purposes of mine site preparation, including: cutting new rights of way (except when related to access road construction); providing access to a mine site for vehicles and equipment (except when related to access road construction); other earth disturbances associated with site preparation activities on any areas where active mining activities have not yet commenced (e.g., for heap leach pads, waste rock facilities, tailings impoundments, wastewater treatment plants); and

- **b.** construction of staging areas to prepare for erecting structures such as to house project personnel and equipment, mill buildings, etc., and construction of access roads. Earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining are considered to be "construction" and have additional effluent limits in Part 8.G.4.2.

8.G.3.3 ***Active mining activities.*** Activities related to the extraction, removal or recovery, and beneficiation of metal ore from the earth; removal of overburden and waste rock to expose mineable minerals; and site reclamation and closure activities. All such activities occur within the "active mining area." Reclamation involves activities undertaken, in compliance with applicable mined land reclamation requirements, to return the land to an appropriate post-mining contour and land use in order to meet applicable federal and state reclamation requirements. In addition, once earth-disturbing activities conducted prior to active mining activities have ceased and all related requirements in Part 8.G.4 have been met, and a well-delineated "active mining area" has been established, all activities (including any clearing, grading, and excavation) that occur within the active mining area are "active mining activities."

8.G.3.4 ***Active mining area.*** A place where work or other activity related to the extraction, removal or recovery of metal ore is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.

Note: Earth-disturbing activities described in the definition in Part 8.G.3.2 that occur on areas outside the active mining area (e.g., for expansion of the mine into undeveloped territory) are considered "earth-disturbing conducted prior to active mining activities", and must comply with the requirements in Part 8.G.4.

8.G.3.5 ***Inactive metal mining facility.*** A site or portion of a site where metal mining and/or milling occurred in the past but there are no active mining activities occurring as defined above, and where the inactive portion is not covered by an active mining permit issued by the applicable state or federal agency. An inactive metal mining facility has an identifiable owner / operator. Sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials and sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim are not considered either active or inactive mining facilities and do not require an NPDES industrial stormwater permit.

8.G.3.6 ***Temporarily inactive metal mining facility.*** A site or portion of a site where metal mining and/or milling occurred in the past but currently are not being actively undertaken, and the facility is covered by an active mining permit issued by the applicable state or federal agency.

8.G.4 Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities

Stormwater discharges from earth-disturbing activities conducted prior to active mining activities (defined in Part 8.G.3.2) are covered under this permit. For such earth-disturbing activities, you must comply with all applicable requirements in Parts 1-9 of the MSGP except for the technology-based effluent limits in Part 8.G.5 and Part 2.1.2, the inspection requirements in Part 8.G.7 and Part 3, and the monitoring requirements in Part 8.G.8 and Part 4.

Authorized discharges from areas where earth-disturbing activities have ceased and stabilization as specified in Part 8.G.4.1.9 or 8.G.4.2.11, where appropriate, has been completed (stabilization is not required for areas where active mining activities will occur), are no longer subject to the Part 8.G.4 requirements. At such time, authorized discharges become subject to all other applicable requirements in the MSGP, including the effluent limits in Parts 2.1.2 and 8.G.5, the inspection requirements in Parts 3 and 8.G.7, and the monitoring requirements in Parts 4 and 8.G.8.

8.G.4.1 ***Technology-Based Effluent Limits Applicable to All Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*** The following technology-based effluent limits apply to authorized discharges from all earth-disturbing activities conducted prior to active mining activities defined in Part 8.G.3.2(a) and 8.G.3.2(b). These limits supersede the technology-based limits listed in Part 2.1.2 and Part 8.G.5 of the MSGP.

8.G.4.1.1 Erosion and sediment control installation requirements.

- By the time construction activities commence, install and make operational downgradient sediment controls, unless this timeframe is infeasible. If infeasible you must install and make such controls operational as soon as practicable or as soon as site conditions permit.
- All other stormwater controls described in the SWPPP must be installed and made operational as soon as conditions on each portion of the site allows.

8.G.4.1.2 Erosion and sediment control maintenance requirements. You must:

- Ensure that all erosion and sediment controls remain in effective operating condition.
- Wherever you determine that a stormwater control needs maintenance to continue operating effectively, initiate efforts to fix

the problem immediately after its discovery, and complete such work by the end of the next work day.

- When a stormwater control must be replaced or significantly repaired, complete the work within 7 days, unless infeasible. If 7 days is infeasible, you must complete the installation or repair as soon as practicable.

8.G.4.1.3 **Perimeter controls.** You must:

- Install sediment controls along those perimeter areas of your disturbed area that will receive stormwater, except where site conditions prevent the use of such controls (in which case, maximize their installation to the extent practicable).
- Remove sediment before it accumulates to one-half of the above-ground height of any perimeter control.

8.G.4.1.4 ***Sediment track-out.*** For construction vehicles and equipment exiting the site directly onto paved roads, you must:

- Use appropriate stabilization techniques to minimize sediment track-out from vehicles and equipment prior to exit;
- Use additional controls to remove sediment from vehicle and equipment tires prior to exit, where necessary;
- Remove sediment that is tracked out onto paved roads by end of the work day.

Note: EPA recognizes that some fine grains may remain visible on the surfaces of off-site streets, other paved areas, and sidewalks even after you have implemented sediment removal practices. Such "staining" is not a violation of Part 8.G.4.1.4.

8.G.4.1.5 ***Soil or sediment stockpiles.*** You must:

- Minimize erosion of stockpiles from stormwater and wind via temporary cover, if feasible.
- Prevent up-slope stormwater flows from causing erosion of stockpiles (e.g., by diverting flows around the stockpile).
- Minimize sediment from stormwater that runs off of stockpiles, using sediment controls (e.g., a sediment barrier or downslope sediment control).

8.G.4.1.6 ***Sediment basins.*** If you intend to install a sediment basin to treat stormwater from your earth-disturbing activities, you must:

- Provide storage for either (1) the 2-year, 24-hour storm, or (2) 3,600 cubic feet per acre drained.
- Prevent erosion of (1) basin embankments using stabilization controls (e.g., erosion control blankets), and (2) the inlet and outlet points of the basin using erosion controls and velocity dissipation devices.

8.G.4.1.7 **Minimize dust.** You must minimize the generation of dust through the appropriate application of water or other dust suppression techniques that minimize pollutants being discharged into surface waters.

8.G.4.1.8 ***Restrictions on use of treatment chemicals.*** If you intend to use sediment treatment chemicals at your site, you are subject to the following minimum requirements:

- Use conventional erosion and sediment controls prior to and after application of chemicals;
- Select chemicals suited to soil type, and expected turbidity, pH, flow rate;
- Minimize the discharge risk from stored chemicals;
- Comply with state/local requirements;
- Use chemicals in accordance with good engineering practices and specifications of chemical supplier;
- Ensure proper training;
- Provide proper SWPPP documentation.

If you plan to use cationic treatment chemicals (as defined in Appendix A), you are ineligible for coverage under this permit, unless you notify your applicable EPA Regional Office in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

8.G.4.1.9 ***Site stabilization requirements for earth-disturbing activities performed for purposes of mine site preparation as defined in 8.G.3.2(a) (i.e., not applicable to construction of staging areas for structures and access roads as defined in 8.G.3.2(b)).*** You must comply with the following stabilization requirements except where the intended function of the site accounts for such disturbed earth (e.g., the earth disturbances will become actively mined, or the controls implemented at the active mining area effectively control the disturbance) (although you are encouraged to do so within the active mining area, where appropriate):

- *Temporary stabilization of disturbed areas.* Stabilization measures must be initiated immediately in portions of the site where earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.G.3.2(a)) have temporarily ceased, but in no case more than 14 days after such activities have temporarily ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities performed for purposes of mine site preparation has temporarily ceased, temporary vegetative stabilization measures must be initiated as soon as practicable. Until temporary vegetative stabilization is achieved, interim measures such as erosion control blankets with an appropriate seed base and tackifiers must be employed. In areas of the site where earth-disturbing activities performed for purposes of mine site preparation have permanently ceased prior to active mining, temporary stabilization measures must be implemented to minimize mobilization of sediment or other pollutants until active mining activities commence.
- *Final stabilization of disturbed areas.* Stabilization measures must be initiated immediately where earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.G.3.2(a)) have permanently ceased, but in no case more than 14 days after the earth- disturbing activities have permanently ceased. In arid, semi-

arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities have permanently ceased, final vegetative stabilization measures must be initiated as soon as possible. Until final stabilization is achieved, temporary stabilization measures, such as erosion control blankets with an appropriate seed base and tackifiers, must be used.

8.G.4.2 ***Additional Technology-Based Effluent Limits Applicable Only to the Construction of Staging Areas for Structures and Access Roads.*** The following technology-based effluent limits apply to authorized discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads, as defined in Part 8.G.3.2(b). These limits supersede the technology-based limits listed in Part 2.1.2 and Part 8.G.5 of the MSGP. These limits do not apply to earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.G.3.2(a)).

8.G.4.2.1 **Area of *disturbance*.** You must minimize the amount of soil exposed during construction activities.

8.G.4.2.2 ***Erosion and sediment control design requirements***. You must:

- Design, install and maintain effective erosion and sediment controls to minimize the discharge of pollutants from construction activities. Account for the following factors in designing your erosion and sediment controls:
  - The expected amount, frequency, intensity and duration of precipitation;
  - The nature of stormwater discharges and run-on at the site, including factors such as impervious surfaces, slopes and site drainage features;
  - The range of soil particle sizes expected to be present on the site.
- Direct discharges from your stormwater controls to vegetated areas of your site to increase sediment removal and maximize stormwater infiltration, including any natural buffers, unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.
- If any stormwater flow becomes or will be channelized at your site, you must design erosion and sediment controls to control both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.
- If you install stormwater conveyance channels, they must be designed to avoid unstabilized areas on the site and to reduce erosion, unless infeasible. In addition, you must minimize erosion of channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

8.G.4.2.3 **Natural Buffers.** For any stormwater discharges from construction activities within 50 feet of a water of the U.S., you must comply with one of the following compliance alternatives:

1. Provide a 50-foot undisturbed natural buffer between construction activities and the water of the U.S.; or
2. Provide an undisturbed natural buffer that is less than 50 feet supplemented by additional erosion and sediment controls, which in combination, achieve a sediment load reduction that is equivalent to a 50-foot undisturbed natural buffer; or
3. If it is infeasible to provide an undisturbed natural buffer of any size, implement erosion and sediment controls that achieve a sediment load reduction that is equivalent to a 50-foot undisturbed natural buffer.

There are exceptions when buffer requirements do not apply:

- There is no stormwater discharge from construction disturbances to a water of the U.S;
- The natural buffer has already been eliminated by preexisting development disturbances;
- The disturbance is for the construction of a water-dependent structure or construction approved under a CWA section 404 permit;
- For linear construction projects, you are not required to comply with the requirements if there are site constraints provided that, to the extent feasible, you limit disturbances within 50 feet of a water of the U.S. and/or you provide supplemental erosion and sediment controls to treat stormwater discharges from any disturbances within 50 feet of a water of the U.S.

See EPA's industrial stormwater website under "Fact Sheets and Guidance" for information on complying with these alternatives: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities.

8.G.4.2.4 **Soil *or sediment stockpiles***. In addition to the requirements in Part 8.G.4.1.5, you must locate any piles outside of any natural buffers established under Part 8.G.4.2.3.

8.G.4.2.5 ***Sediment basins***. In addition to the requirements in Part 8.G.4.1.6, you must locate sediment basins outside of any surface waters and any natural buffers established under Part 8.G.4.2.3, and you must utilize outlet structures that withdraw water from the surface, unless infeasible.

8.G.4.2.6 ***Native topsoil preservation.*** You must preserve native topsoil removed during clearing, grading, or excavation, unless infeasible. Store topsoil in a manner that will maximize its use in reclamation or final vegetative stabilization (e.g., by keeping the topsoil stabilized with seed or similar measures). This requirement does not apply if the intended function of the disturbed area dictates that topsoil be disturbed or removed.

8.G.4.2.7 ***Steep slopes.*** You must minimize the disturbance of steep slopes. The permit does not prevent or prohibit disturbance on steep slopes.

Depending on site conditions and needs, disturbance on steep slopes may be necessary (e.g., a road cut in mountainous terrain; for grading

steep slopes prior to erecting the mine office). Where steep slope disturbances are necessary, you can minimize the disturbances to steep slopes through the implementation of a number of standard erosion and sediment control practices, such as by phasing disturbances in these areas and using stabilization practices specifically for steep grades.

8.G.4.2.8 ***Soil compaction.*** Where final vegetative stabilization will occur or where infiltration practices will be installed, you must either restrict vehicle/ equipment use in these areas to avoid soil compaction or use soil conditioning techniques to support vegetative growth. Minimizing soil compaction is not required where compacted soil is integral to the functionality of the site.

8.G.4.2.9 ***Dewatering Practices.*** You are prohibited from discharging ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults or other similar points of accumulation, unless such waters are first effectively managed by appropriate controls (e.g., sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, or filtration systems). Uncontaminated, non-turbid dewatering water can be discharged without being routed to a control. (An uncontaminated discharge is a discharge that meets applicable water quality standards.)

You must also meet the following requirements for dewatering activities:

- Discharge requirements:
  - No discharging visible floating solids or foam;
  - Remove oil, grease and other pollutants from dewatering water via an oil-water separator or suitable filtration device (such as a cartridge filter);
  - Utilize vegetated upland areas of the site, to the extent feasible, to infiltrate dewatering water before discharge. In no case shall waters of the U.S. be considered part of the treatment area;
  - Implement velocity dissipation devices at all points where dewatering water is discharged;
  - Haul backwash water away for disposal or return it to the beginning of the treatment process; and
  - Clean or replace the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.
- Treatment chemical restrictions: If you use polymers, flocculants or other chemicals to treat dewatering water, you must comply with the requirements in Parts 8.G.4.1.8.

8.G.4.2.10 ***Pollution prevention requirements.***

- *Prohibited discharges* (this non-exhaustive list of prohibited non-stormwater discharges is included here as a reminder that only the only authorized non-stormwater discharges are those enumerated in Part 1.2.2):
  - Wastewater from washout of concrete;
  - Wastewater from washout and cleanout of stucco, paint, form

release oils, curing compounds, and other construction materials;

- Fuels, oils, or other pollutants used for operation and maintenance of vehicles or equipment;
- Soaps, solvents, or detergents used in vehicle or equipment washing;
- Toxic or hazardous substances from a spill or other release.

- *Design and location requirements:* Minimize the discharge of pollutants from pollutant sources by:
  - Minimizing exposure;
  - Using secondary containment, spill kits, or other equivalent measures;
  - Locating pollution sources away from surface waters, storm sewer inlets, and drainageways;
  - Cleaning up spills immediately (do not clean by hosing area down).
- *Pollution prevention requirements for wash waters:* Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- *Pollution prevention requirements for the storage, handling, and disposal of construction products, materials, and wastes:* Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to stormwater. Minimization of exposure is not required in cases where the exposure to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

8.G.4.2.11 ***Site Stabilization requirements for the construction of staging areas for structures and access roads as defined in 8.G.3.2(b***) (i.e., not applicable to earth-disturbing activities performed for purposes of mine site preparation as defined in 8.G.3.2(a)). You must comply with the following stabilization requirements, except where the intended function of the site accounts for such disturbed earth (e.g., the area of construction will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- By no later than the end of the next work day after construction work in an area has stopped permanently or temporarily ("temporarily" means the land will be idle for a period of 14 days or more but earth-disturbing activities will resume in the future), immediately initiate stabilization measures;
- If using vegetative measures, by no later than 14 days after initiating stabilization:
  - Seed or plant the area, and provide temporary cover to protect the planted area;
  - Once established, vegetation must be uniform, perennial (if final stabilization), and cover at least 70% of stabilized area based on

density of native vegetation.

- If using non-vegetative stabilization, by no later than 14 days after initiating stabilization:
  - Install or apply all non-vegetative measures;
  - Cover all areas of exposed soil.

Note: For the purposes of this permit, EPA will consider any of the following types of activities to constitute the initiation of stabilization: 1. Prepping the soil for vegetative or non-vegetative stabilization; 2. Applying mulch or other non-vegetative product to the exposed area; 3. Seeding or planting the exposed area; 4. Starting any of the activities in # 1 – 3 on a portion of the area to be stabilized, but not on the entire area; and 5. Finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization.

Exceptions:

- Arid, semi-arid (if construction occurs during seasonally dry period), or drought-stricken areas:
  - Within 14 days of stopping construction work in an area, install any necessary non-vegetative stabilization measures;
  - Initiate vegetative stabilization as soon as conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Plant the area so that within 3 years the 70% cover requirement is met.
- Sites affected by severe storm events or other unforeseen circumstances:
  - Initiate vegetative stabilization as soon conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Plant the area so that so that within 3 years the 70% cover requirement is met.

8.G.4.3 *Water Quality-Based Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following water quality-based limits apply to earth-disturbing activities conducted prior to active mining activities defined in Part 8.G.3.2(a) and 8.G.3.2(b), in addition to the water quality-based limits in Part 2.2 of the MSGP.

Stricter requirements apply if your site will discharge to an impaired water or a water that is identified by your state, tribe, or EPA as a Tier 2 or Tier 2.5 for antidegradation purposes:

- More rapid stabilization of exposed areas: Complete initial stabilization activities within 7 days of stopping earth-disturbing work.
- More frequent site inspections: Once every 7 days and within 24 hours of a storm event of 0.25 inches or greater.

8.G.4.4 *Inspection Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following requirements supersede the inspection requirements in Part 3 and 8.G.7 of the MSGP for earth-disturbing activities conducted prior to active mining activities defined in Part 8.G.3.2(a) and 8.G.3.2(b).

8.G.4.4.1 Inspection frequency

- At least once every 7 calendar days, or
- Once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater.

Note:

- Inspections only required during working hours;
- Inspections not required during unsafe conditions; and
- If you choose to inspect once every 14 days, you must have a method for measuring rainfall amount on site (either rain gauge or representative weather station)

Note: To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day.

Note: You are required to specify in your SWPPP which schedule you will be following.

Note: "Within 24 hours of the occurrence of a storm event" means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

8.G.4.4.2 Reductions in inspection frequency.

- Stabilized areas: You may reduce the frequency of inspections to once per month in any area of your site where stabilization has occurred pursuant to Part 8.G.4.1.9 or 8.G.4.2.11.
- Arid, semi-arid, and drought stricken areas: If earth-disturbing activities are occurring during the seasonally dry period or during a period in which drought is predicted to occur, you may reduce inspections to once per month and within 24 hours of a 0.25 inch storm event.
- Frozen conditions: You may temporarily suspend or reduce inspections to once per month until thawing conditions occur if frozen conditions are continuous and disturbed areas have been stabilized. For extreme conditions in remote areas, e.g., where transit to the site is perilous/restricted or temperatures are routinely below freezing, you may suspend inspections until the conditions are conducive to safe access, and more frequent inspections can resume.

8.G.4.4.3 **Areas to be inspected.** You must at a minimum inspect the all of the following areas:

- Disturbed areas;
- Stormwater controls and pollution prevention measures;
- Locations where stabilization measures have been implemented;
- Material, waste, borrow, or equipment storage and maintenance areas;
- Areas where stormwater flows;
- Points of discharge.

8.G.4.4.4 ***What to check for during inspections.*** At a minimum you must check:

- Whether all stormwater controls are installed, operational and working as intended;
- Whether any new or modified stormwater controls are needed;
- For conditions that could lead to a spill or leak;
- For visual signs of erosion/sedimentation at points of discharge.

If a discharge is occurring, check:

- The quality and characteristics of the discharge;
- Whether controls are operating effectively.

8.G.4.4.5 **Inspection report.** Within 24 hours of an inspection, complete a report that includes:

- Inspection date;
- Name and title of inspector(s);
- Summary of inspection findings;
- Rainfall amount that triggered the inspection (if applicable);
- If it was unsafe to inspect a portion of the site, include documentation of the reason and the location(s);
- Each inspection report must be signed;
- Keep a current copy of all reports at the site or at an easily accessible location.

8.G.5 Technology-Based Effluent Limits for Active Mining Activities

Note: These requirements do not apply for any discharges from earth-disturbing activities conducted prior to active mining as defined in 8.G.3.2(a) or 8.G.3.2(b).

8.G.5.1 ***Employee training***. (See also Part 2.1.2.8) Conduct employee training at least annually at active and temporarily inactive facilities.

8.G.5.2 ***Stormwater controls.*** Apart from the control measures you implement to meet your Part 2 technology-based effluent limits, where necessary to minimize pollutant discharges in stormwater, implement the following control measures at your site. The potential pollutants identified in Part 8.G.6.3 shall determine the priority and appropriateness of the control measures selected. For mines subject to dust control requirements under state or county air quality permits, provided the requirements are equivalent, compliance with such air permit dust requirements shall constitute compliance with the dust control effluent limit in Part 2.1.2.10.

Stormwater diversions: Divert stormwater away from potential pollutant sources through implementation of control measures such as the following, where determined to be feasible (list not exclusive): interceptor or diversion controls (e.g., dikes, swales, curbs, berms); pipe slope drains; subsurface drains; conveyance systems (e.g., channels or gutters, open-top box culverts, and waterbars; rolling dips and road sloping; roadway surface water deflector and culverts); or their equivalents.

Capping: When capping is necessary to minimize pollutant discharges in stormwater, identify the source being capped and the material used to construct the cap.

Treatment: If treatment of stormwater (e.g., chemical or physical systems, oil - water separators, artificial wetlands) is necessary to protect water quality, describe the type and location of treatment used. Passive and/or active treatment of stormwater is encouraged, where feasible. Treated stormwater may be discharged as a stormwater source regulated under this permit provided the discharge is not combined with discharges subject to effluent limitation guidelines for the Ore Mining and Dressing Point Source Category (40 CFR Part 440).

8.G.5.3 ***Discharge testing.*** (See also Part 6.2.3.4) Test or evaluate all discharge points covered under this permit for the presence of specific mining-related but unauthorized non-stormwater discharges such as seeps or adit discharges, or discharges subject to effluent limitations guidelines (e.g., 40 CFR Part 440), such as mine drainage or process water. Alternatively (if applicable), you may keep a certification with your SWPPP consistent with Part 8.G.6.6.

8.G.6 Additional SWPPP Requirements for Mining Operations

Note: The requirements in Part 8.G.6 are not applicable to inactive metal mining facilities.

8.G.6.1 ***Nature of industrial activities***. (See also Part 6.2.2) Briefly document in your SWPPP the mining and associated activities that can potentially affect the stormwater discharges covered by this permit, including a general description of the location of the site relative to major transportation routes and communities.

8.G.6.2 ***Site map***. (See also Part 6.2.2) Document in your SWPPP the locations of the following (as appropriate): mining or milling site boundaries; access and haul roads; outline of the drainage areas of each stormwater discharge points within the facility with indications of the types of discharges from the drainage areas; location(s) of all permitted discharges covered under an individual NPDES permit; outdoor equipment storage, fueling, and maintenance areas; materials handling areas; outdoor manufacturing, outdoor storage, and material disposal areas; outdoor chemicals and explosives storage areas; overburden, materials, soils, or waste storage areas; location of mine drainage (where water leaves mine) or other process water; tailings piles and ponds (including proposed ones); heap leach pads; off-site points of discharge for mine drainage and process water; surface waters; boundary of tributary areas that are subject to effluent limitations guidelines; and location(s) of reclaimed areas.

8.G.6.3 ***Potential pollutant sources.*** (See also Part 6.2.3) For each area of the mine or mill site where stormwater discharges associated with industrial activities occur, identify the types of pollutants (e.g., heavy metals, sediment) likely to be present in significant amounts. Consider these factors: the mineralogy of the ore and waste rock (e.g.,

acid forming); toxicity and quantity of chemicals used, produced, or discharged; the likelihood of contact with stormwater; vegetation of site (if any); and history of significant leaks or spills of toxic or hazardous pollutants. Also include a summary of any existing ore or waste rock or overburden characterization data and test results for potential generation of acid rock. If any new data is acquired due to changes in ore type being mined, update your SWPPP with this information.

8.G.6.4 ***Documentation of control measures.*** Document all control measures that you implement consistent with Part 8.G.5.2. If control measures are implemented or planned but are not listed in Part 8.G.5.2 (e.g., substituting a less toxic chemical for a more toxic one), include descriptions of them in your SWPPP. If you are in compliance with dust control requirements under state or county air quality permits, you must include (or summarize, as necessary) what the state or county air quality permit dust control requirements are and how you've achieved compliance with them.

8.G.6.5 ***Employee training***. All employee training(s) must be documented in the SWPPP.

8.G.6.6 ***Certification of permit coverage for commingled non-stormwater discharges***. If you are able, consistent with Part 8.G.5.3 above, to certify that a particular discharge composed of commingled stormwater and non-stormwater is covered under a separate NPDES permit, and that permit subjects the non-stormwater portion to effluent limitations prior to any commingling, retain such certification with your SWPPP. This certification must identify the non-stormwater discharges, the applicable NPDES permit(s), the effluent limitations placed on the non-stormwater discharge by the permit(s), and the points at which the limitations are applied.

8.G.7 Additional Inspection Requirements *(See also Part 3.1)*

Except for earth-disturbing activities conducted prior to active mining activities as defined in Part 8.G.3.2(a) and 8.G.3.2(b), which are subject to Part 8.G.4.4, inspect sites at least quarterly unless adverse weather conditions make the site inaccessible. Sites which discharge to waters designated as Tier 2 or 2.5 or waters which are impaired for sediment or nitrogen must be inspected monthly. See Part 8.G.8.5 for inspection requirements for inactive and unstaffed sites.

8.G.8 Monitoring and Reporting Requirements (See also Part 4)

Note: There are no Part 8.G.8 monitoring and reporting or impaired waters monitoring requirements for inactive and unstaffed sites.

8.G.8.1 Indicator Monitoring (See also Part 4.2.1)

Table 8.G-1 identifies indicator monitoring that applies to the specific subsectors of Sector G. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.G-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Applies to all Sector G (Subsectors G1 and G2) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.G.8.2 *Benchmark Monitoring for Active Copper Ore Mining and Dressing Facilities.*

Table 8.G-2 identifies benchmarks that apply to active copper ore mining and dressing facilities. These benchmarks apply to both your primary industrial activity and any co- located industrial activities.

Table 8.G-2		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector G1. Active Copper Ore Mining and Dressing Facilities (SIC 1021)	Total Suspended Solids (TSS)	100 mg/L
	Nitrate plus Nitrite Nitrogen	0.68 mg/L
	Chemical Oxygen Demand (COD)	120 mg/L

8.G.8.3 ***Benchmark Monitoring Requirements for Discharges From Waste Rock and Overburden Piles at Active Metal Mining Facilities.*** For discharges from waste rock and overburden piles, perform benchmark monitoring once in the first year for the parameters listed in Table 8.G-3, and twice annually in all subsequent years of coverage under this permit for any parameters for which the benchmark has been exceeded. You are also required to conduct analytic monitoring for the parameters listed in Table 8.G-4 in accordance with the requirements in Part 8.G.8.4. The Director may also notify you that you must perform additional monitoring to accurately characterize the quality and quantity of pollutants discharged from your waste rock and overburden piles.

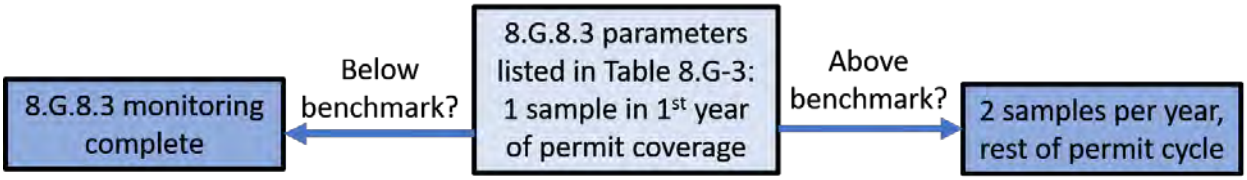
8.G.8.3 monitoring complete
Below benchmark?
8.G.8.3 parameters listed in Table 8.G-3: 1 sample in 1st year of permit coverage
Above benchmark?
2 samples per year, rest of permit cycle

Table 8.G-3.		
Subsector (Discharges may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector G2. Iron Ores; Copper Ores; Lead and Zinc Ores; Gold and Silver Ores; Ferroalloy Ores, Except Vanadium; and Miscellaneous Metal Ores (SIC Codes 1011, 1021, 1031, 1041, 1044, 1061, 1081, 1094, 1099) (Note: when analyzing hardness for a suite of metals, it is more cost effective to add analysis of calcium and magnesium, and have hardness calculated than to require hardness analysis separately)	Total Suspended Solids (TSS)	100 mg/L
	Turbidity	50 NTU
	pH	6.0-9.0 s.u.
	Hardness (as $CaCO_3$; calc. from Ca, Mg)[2]	no benchmark value
	Total Recoverable Antimony	640 µg/L
	Total Recoverable Arsenic (freshwater) Total Recoverable Arsenic (saltwater)[1]	150 µg/L 69 µg/L
	Total Recoverable Beryllium	130 µg/L
	Total Recoverable Cadmium (freshwater)[2] Total Recoverable Cadmium (saltwater)[1]	Hardness Dependent 33 µg/L
	Total Recoverable Copper (freshwater) Total Recoverable Copper (saltwater)[1]	5.19 µg/L 4.8 µg/L
	Total Recoverable Lead (freshwater)[2] Total Recoverable Lead (saltwater)[1]	Hardness Dependent 210 µg/L
	Total Recoverable Mercury (freshwater) Total Recoverable Mercury (saltwater)[1]	1.4 µg/L 1.8 µg/L
	Total Recoverable Nickel (freshwater)[2] Total Recoverable Nickel (saltwater)[1]	Hardness Dependent 74 µg/L
	Total Recoverable Selenium (freshwater) Total Recoverable Selenium (saltwater)[1]	1.5 µg/L for still/standing (lentic) waters; 3.1 µg/L for flowing (lotic) waters 290 µg/L
	Total Recoverable Silver (freshwater)[2] Total Recoverable Silver (saltwater)[1]	Hardness Dependent 1.9 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L

[1]Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.

[2]The freshwater benchmark values of some metals are dependent on water hardness. For these parameters,

permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	**Cadmium** (µg/L)		**Lead** (µg/L)	**Nickel** (µg/L)	**Silver** (µg/L)	**Zinc** (µg/L)
0-24.99 mg/L	0.49		14	145	0.37	37
25-49.99 mg/L	0.73		24	203	0.80	52
50-74.99 mg/L	1.2		45	314	1.9	80
75-99.99 mg/L	1.7		69	418	3.3	107
100-124.99 mg/L	2.1		95	518	5.0	132
125-149.99 mg/L	2.6		123	614	7.1	157
150-174.99 mg/L	3.1		152	707	9.4	181
175-199.99 mg/L	3.5		182	798	12	204
200-224.99 mg/L	4.0		213	888	15	227
225-249.99 mg/L	4.4		246	975	18	249
250+ mg/L	4.7		262	1019	20	260

8.G.8.4 ***Additional Analytic Monitoring Requirements for Discharges From Waste Rock and Overburden Piles at Active Metal Mining Facilities.*** In addition to the monitoring required in Part 8.G.8.3 for discharges from waste rock and overburden piles, you must also conduct monitoring for additional parameters based on the type of ore you mine at your site. The schedule for monitoring for this Part 8.G.8.4 is the same as specified in Part 8.G.8.3: once in the first year for the parameters listed in Table 8.G-4 (except radium and uranium), and twice annually in all subsequent years of coverage under this permit for any parameters for which the benchmark has been exceeded. Where a parameter in Table 8.G-4 is the same as a pollutant you are required to monitor for in Table 8.G-3 (i.e., for all of the metals), you must use the corresponding benchmark in Table 8.G-3 and you may use any monitoring results conducted for Part 8.G.8.3 to satisfy the monitoring requirement for that parameter for Part 8.G.8.4. For radium and uranium, which do not have corresponding benchmarks in Table 8.G-3, there are no applicable benchmarks. For radium and uranium, you must monitor quarterly (as identified in Part 4.1.7) for your first four full quarters of permit coverage commencing no earlier than [insert 90 days after permit effective date], after which you may discontinue monitoring for these two parameters.

Table 8.G-4. Additional Monitoring Requirements for Discharges from Waste Rock and Overburden Piles

Supplemental Requirements			
Type of Ore Mined	**Pollutants of Concern**		
	Total Suspended Solids (TSS)	**pH**	**Metals, Total**
Tungsten Ore	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Zinc (H)
Nickel Ore	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Zinc (H)
Aluminum Ore	X	X	Iron
Mercury Ore	X	X	Nickel (H)
Iron Ore	X	X	Iron (Dissolved)

Table 8.G-4. Additional Monitoring Requirements for Discharges from Waste Rock and Overburden Piles			
Supplemental Requirements			
Type of Ore Mined	**Pollutants of Concern**		
	Total Suspended Solids (TSS)	**pH**	**Metals, Total**
Platinum Ore			Cadmium (H), Copper, Mercury, Lead (H), Zinc (H)
Titanium Ore	X	X	Iron, Nickel (H), Zinc (H)
Vanadium Ore	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Zinc (H)
Molybdenum	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Mercury, Zinc (H)
Uranium, Radium, and Vanadium Ore	X	X	Chemical Oxygen Demand, Arsenic, Radium (Dissolved and Total), Uranium, Zinc (H)

Note: An "X" indicated for TSS and/or pH means that you are required to monitor for those parameters. (H) indicates that hardness must also be measured when this pollutant is measured.

8.G.8.5 ***Inactive and Unstaffed Sites – Conditional Exemption from No Exposure Requirements for Quarterly Visual Assessments and Routine Facility Inspections.*** As a Sector G facility, if you are seeking to exercise a waiver from the quarterly visual assessment and routine facility inspection requirements for inactive and unstaffed sites (including temporarily inactive sites), you are conditionally exempt from the requirement to certify that "there are no industrial materials or activities exposed to stormwater" in Parts 3.1.5 and 3.2.4.4. This exemption is conditioned on the following:

- If circumstances change and your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the quarterly visual assessment requirements; and
- EPA retains the authority to revoke this exemption and/or the monitoring waiver where it is determined that the discharge causes, has a reasonable potential to cause, or contributes to an instream excursion above an applicable water quality standard, including designated uses.

Subject to the two conditions above, if your facility is inactive and unstaffed, you are waived from the requirement to conduct quarterly visual assessments and routine facility inspections. You must still do an annual site inspection in accordance with Part 3.1. You are encouraged to inspect your site more frequently where you have reason to believe that severe weather or natural disasters may have damaged control measures or increased discharges.

Table 8.G-5. Applicability of the Multi-Sector General Permit to Stormwater From Active Mining and Dressing Sites, Temporarily Inactive Sites, and Sites Undergoing Reclamation	
Discharge/Source of Discharge	**Note/Comment**
Piles	
Waste rock/overburden	Covered under the MSGP if composed entirely of stormwater and not combined with mine drainage. See note below.
Topsoil	--

Table 8.G-5. Applicability of the Multi-Sector General Permit to Stormwater From Active Mining and Dressing Sites, Temporarily Inactive Sites, and Sites Undergoing Reclamation	
Discharge/Source of Discharge	**Note/Comment**
Roads constructed of waste rock or spent ore	
Onsite haul roads	Covered under the MSGP if composed entirely of stormwater and not combined with mine drainage. See note below.
Offsite haul and access roads	--
Roads not constructed of waste rock or spent ore	
Onsite haul roads	Covered under the MSGP except if mine drainage is used for dust control.
Offsite haul and access roads	--
Milling/concentrating	
Runoff from tailings dams and dikes when constructed of waste rock/tailings	Covered under the MSGP except if process fluids are present and only if composed entirely of stormwater and not combined with mine drainage. See Note below.
Runoff from tailings dams/dikes when not constructed of waste rock and tailings	Covered under the MSGP except if process fluids are present.
Concentration building	Covered under the MSGP If stormwater only and no contact with piles.
Mill site	If stormwater only and no contact with piles.
Ancillary areas	
Office and administrative building and housing	Covered under the MSGP if mixed with stormwater from the industrial area.
Chemical storage area	--
Docking facility	Covered under the MSGP except if excessive contact with waste product that would otherwise constitute mine drainage.
Explosive storage	--
Fuel storage (oil tanks/coal piles)	--
Vehicle and equipment maintenance area/building	--
Parking areas	Covered under the MSGP but coverage unnecessary if only employee and visitor-type parking.
Power plant	
Truck wash area	Covered under the MSGP except when excessive contact with waste product that would otherwise constitute mine drainage.
Reclamation-related areas	
Any disturbed area (unreclaimed)	Covered under the MSGP only if not in active mining area.
Reclaimed areas released from reclamation requirements prior to Dec. 17, 1990	--
Partially/inadequately reclaimed areas or areas not released from reclamation requirements	--

Note: Stormwater from these sources are subject to the NPDES program for stormwater unless mixed with discharges subject to 40 CFR Part 440 that are regulated by another permit prior to mixing. Non-stormwater

discharges from these sources are subject to NPDES permitting and may be subject to the effluent limitation guidelines under 40 CFR Part 440. Discharges from overburden/waste rock and overburden/waste rock-related areas are not subject to 40 CFR Part 440 unless: (1) it drains naturally (or is intentionally diverted) to a point source; and (2) combines with "mine drainage" that is otherwise regulated under the Part 440 regulations. For such sources, coverage under this permit would be available if the discharge composed entirely of stormwater does not combine with other sources of mine drainage that are not subject to 40 CFR Part 440, as well as meeting other eligibility criteria contained in Part 1.1 of the permit.

Operators bear the initial responsibility for determining the applicable technology-based standard for such discharges. EPA recommends that operators contact the relevant NPDES permit issuance authority for assistance to determine the nature and scope of the "active mining area" on a mine-by-mine basis, as well as to determine the appropriate permitting mechanism for authorizing such discharges.

8.G.9 Termination of Permit Coverage

8.G.9.1 ***Termination of Permit Coverage for Sites Reclaimed After December 17, 1990***. A site or a portion of a site that has been released from applicable state or federal reclamation requirements after December 17, 1990, is no longer required to maintain coverage under this permit. If the site or portion of a site reclaimed after December 17, 1990, was not subject to reclamation requirements, the site or portion of the site is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed as defined in Part 8.G.3.3.

8.G.9.2 ***Termination of Permit Coverage for Sites Reclaimed Before December 17, 1990.*** A site or portion of a site that was released from applicable state or federal reclamation requirements before December 17, 1990, or that was otherwise reclaimed before December 17, 1990, is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed. A site or portion of a site is considered to have been reclaimed if: (1) stormwater that comes into contact with raw materials, intermediate byproducts, finished products, and waste products does not have the potential to cause or contribute to violations of state water quality standards, soil disturbing activities related to mining at the sites or portion of the site have been completed, (3) the site or portion of the site has been stabilized to minimize soil erosion, and (4) as appropriate depending on location, size, and the potential to contribute pollutants to stormwater discharges, the site or portion of the site has been revegetated, will be amenable to natural revegetation, or will be left in a condition consistent with the post-mining land use.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart H – Sector H – Coal Mines and Coal Mining-Related Facilities

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

Note: Where compliance with a requirement in a separate exploration permit, mining permit, reclamation plan, Surface Mining Control and Reclamation Act (SMCRA) requirements, etc. will result in you fully meeting any requirement in this Subpart, you are considered to have complied with the relevant requirement in this Subpart. You must include documentation in your SWPPP describing your rationale for concluding that any particular action on your part is sufficient to comply with the corresponding requirement in this Subpart.

8.H.1 Covered Stormwater Discharges

The requirements in Subpart H apply to stormwater discharges associated with industrial activity from Coal Mines and Coal Mining-Related facilities as identified by the SIC Codes specified under Sector H in Table D-1 of Appendix D.

8.H.2 Limitations on Coverage

8.H.2.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) Not covered by this permit: discharges from pollutant seeps or underground drainage from inactive coal mines and refuse disposal areas that do not result from precipitation events, and discharges from floor drains in maintenance buildings and other similar drains in mining and preparation plant areas. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2).

8.H.2.2 ***Discharges Subject to Stormwater Effluent Guidelines.*** (See also Part 1.2.1.4) Not authorized by this permit: stormwater discharges subject to an existing effluent limitation guideline at 40 CFR Part 434.

8.H.3 Definitions

The following definitions are not intended to supersede the definitions of active and inactive mining facilities established by 40 CFR 122.26(b)(14)(iii).

8.H.3.1 ***Mining operations*** - For this permit, mining operations are grouped into two distinct categories, with distinct effluent limits and requirements applicable to each: a) earth-disturbing activities conducted prior to active mining activities); and b) active mining activities, which includes reclamation. "Mining operations" can occur at both inactive mining facilities and temporarily inactive mining facilities.

8.H.3.2 ***Earth-disturbing activities conducted prior to active mining activities*** – Consists of two classes of earth-disturbing (i.e., clearing, grading and excavation) activities:

a. Activities performed for purposes of mine site preparation, including: cutting new rights of way (except when related to access road construction); providing access to a mine site for vehicles and equipment (except when related to access road construction); other earth disturbances associated with site preparation

activities on any areas where active mining activities have not yet commenced (e.g., for heap leach pads, waste rock facilities, tailings impoundments, wastewater treatment plants); and

b. Construction of staging areas to prepare for erecting structures such as to house project personnel and equipment, mill buildings, etc., and construction of access roads. Earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining are considered to be "construction" and have additional effluent limits in Part 8.H.4.2.

8.H.3.3 ***Active mining activities*** – Activities related to the extraction, removal or recovery, and preparation of coal; removal of overburden and waste rock to expose mineable minerals; and site reclamation and closure activities. All such activities occur within the "active mining area." Reclamation involves activities undertaken, in compliance with applicable mined land reclamation requirements, to return the land to an appropriate post-mining contour and land use in order to meet applicable federal and state reclamation requirements. In addition, once earth-disturbing activities conducted prior to active mining activities have ceased and all related requirements in Part 8.H.4 have been met, and a well-delineated "active mining area" has been established, all activities (including any clearing, grading, and excavation) that occur within the active mining area are "active mining activities."

8.H.3.4 ***Active mining area*** – A place where work or other activity related to the extraction, removal or recovery of coal is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.

Note: Earth-disturbing activities described in the definition in Part 8.H.3.2 that occur on areas outside the active mining area (e.g., for expansion of the mine into undeveloped territory) are considered "earth-disturbing conducted prior to active mining activities", and must comply with the requirements in Part 8.H.4.

8.H.3.5 ***Inactive coal mining facility*** – A site or portion of a site where coal mining and/or milling occurred in the past but there are no active mining operations occurring as defined above, and where the inactive portion is not covered by an active mining permit issued by the applicable state or federal agency. An inactive coal mining facility has an identifiable owner / operator. Sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials and sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim are not considered either active or inactive mining facilities and do not require an NPDES industrial stormwater permit.

8.H.3.6 ***Temporarily inactive coal mining facility*** – A site or portion of a site where coal mining and/or milling occurred in the past but currently are not being actively undertaken, and the facility is covered by an active mining permit issued by the applicable state or federal agency.

8.H.4 Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities

Stormwater discharges from earth-disturbing activities conducted prior to active mining activities (defined in Part 8.H.3.2) are covered under this permit. For such earth-disturbing activities, you must comply with all applicable requirements in Parts 1-9 of the MSGP except for the

technology-based effluent limits in Part 8.H.5 and Part 2.1.2, the inspection requirements in Part 8.H.7 and Part 3, and the monitoring requirements in Part 8.H.8 and Part 4.

Authorized discharges from areas where earth-disturbing activities have ceased and stabilization as specified in Part 8.H.4.19 or 8.H.4.2.11, where appropriate, has been completed (stabilization is not required for areas where active mining activities will occur), are no longer subject to the Part 8.H.4 requirements. At such time, authorized discharges become subject to all other applicable requirements in the MSGP, including the effluent limits in Parts 2.1.2 and 8.H.5, the inspection requirements in Parts 3 and 8.H.7, and the monitoring requirements in Parts 4, 8.H.8, and 8.H.9.

8.H.4.1 ***Technology-Based Effluent Limits Applicable to All Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*** The following technology-based effluent limits apply to authorized discharges from all earth-disturbing activities conducted prior to active mining activities defined in Parts 8.H.3.2(a) and 8.H.3.2(b). These limits supersede the technology-based limits listed in Part 2.1.2 and Part 8.H.5 of the MSGP.

8.H.4.1.1 ***Erosion and sediment control installation requirements.***

- By the time construction activities commence, install and make operational downgradient sediment controls, unless this timeframe is infeasible. If infeasible you must install and make such controls operational as soon as practicable or as soon as site conditions permit.
- All other stormwater controls described in the SWPPP must be installed and made operational as soon as conditions on each portion of the site allows.

8.H.4.1.2 ***Erosion and sediment control maintenance requirements***. You must:

- Ensure that all erosion and sediment controls remain in effective operating condition.
- Wherever you determine that a stormwater control needs maintenance to continue operating effectively, initiate efforts to fix the problem immediately after its discovery, and complete such work by the end of the next work day.
- When a stormwater control must be replaced or significantly repaired, complete the work within 7 days, unless infeasible. If 7 days is infeasible, you must complete the installation or repair as soon as practicable.

8.H.4.1.3 ***Perimeter controls.*** You must:

- Install sediment controls along those perimeter areas of your disturbed area that will receive stormwater, except where site conditions prevent the use of such controls (in which case, maximize their installation to the extent practicable).
- Remove sediment before it accumulates to one-half of the above-ground height of any perimeter control.

8.H.4.1.4 **Sediment track-out.** For construction vehicles and equipment exiting the site directly onto paved roads, you must:

- Use appropriate stabilization techniques to minimize sediment track-out from vehicles and equipment prior to exit;
- Use additional controls to remove sediment from vehicle and equipment tires prior to exit, where necessary;

- Remove sediment that is tracked out onto paved roads by end of the work day.

Note: EPA recognizes that some fine grains may remain visible on the surfaces of off-site streets, other paved areas, and sidewalks even after you have implemented sediment removal practices. Such "staining" is not a violation of Part 8.H.4.1.4.

8.H.4.1.5 ***Soil or sediment stockpiles.*** You must:

- Minimize erosion of stockpiles from stormwater and wind via temporary cover, if feasible.
- Prevent up-slope stormwater flows from causing erosion of stockpiles (e.g., by diverting flows around the stockpile).
- Minimize sediment from stormwater that runs off of stockpiles, using sediment controls (e.g., a sediment barrier or downslope sediment control).

8.H.4.1.6 ***Sediment basins.*** If you intend to install a sediment basin to treat stormwater from your earth-disturbing activities, you must:

- Provide storage for either (1) the 2-year, 24-hour storm, or (2) 3,600 cubic feet per acre drained.
- Prevent erosion of (1) basin embankments using stabilization controls (e.g., erosion control blankets), and (2) the inlet and outlet points of the basin using erosion controls and velocity dissipation devices.

8.H.4.1.7 ***Minimize dust.*** You must minimize the generation of dust through the appropriate application of water or other dust suppression techniques that minimize pollutants being discharged into surface waters.

8.H.4.1.8 **Restrictions on use of treatment chemicals.** If you intend to use sediment treatment chemicals at your site, you are subject to the following minimum requirements:

- Use conventional erosion and sediment controls prior to and after application of chemicals;
- Select chemicals suited to soil type, and expected turbidity, pH, flow rate;
- Minimize the discharge risk from stored chemicals;
- Comply with state/local requirements;
- Use chemicals in accordance with good engineering practices and specifications of chemical supplier;
- Ensure proper training;
- Provide proper SWPPP documentation.

If you plan to use cationic treatment chemicals (as defined in Appendix A), you are ineligible for coverage under this permit, unless you notify your applicable EPA Regional Office in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

8.H.4.1.9 ***Site stabilization requirements for earth-disturbing activities performed for purposes of mine site preparation as defined in 8.H.3.2(a)*** (i.e., not applicable to construction of staging areas for structures and access roads as defined in 8.H.3.2(b)). You must comply with the following stabilization requirements except where the intended function of the site accounts for such disturbed earth (e.g., the earth disturbances will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- *Temporary stabilization of disturbed areas.* Stabilization measures must be initiated immediately in portions of the site where earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.H.3.2(a)) have temporarily ceased, but in no case more than 14 days after such activities have temporarily ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities performed for purposes of mine site preparation has temporarily ceased, temporary vegetative stabilization measures must be initiated as soon as practicable. Until temporary vegetative stabilization is achieved, interim measures such as erosion control blankets with an appropriate seed base and tackifiers must be employed. In areas of the site where earth-disturbing activities performed for purposes of mine site preparation have permanently ceased prior to active mining, temporary stabilization measures must be implemented to minimize mobilization of sediment or other pollutants until active mining activities commence.
- *Final stabilization of disturbed areas.* Stabilization measures must be initiated immediately where earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.H.3.2(a)) have permanently ceased, but in no case more than 14 days after the earth- disturbing activities have permanently ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities have permanently ceased, final vegetative stabilization measures must be initiated as soon as possible. Until final stabilization is achieved, temporary stabilization measures, such as erosion control blankets with an appropriate seed base and tackifiers, must be used.

8.H.4.2 ***Additional Technology-Based Effluent Limits Applicable Only to the Construction of Staging Areas for Structures and Access Roads.*** The following technology-based effluent limits apply to authorized discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads, as defined in Part 8.H.3.2(b). These limits supersede the technology-based limits listed in Part 2.1.2 and Part 8.H.5 of the MSGP. These limits do not apply to earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.H.3.2(a)).

8.H.4.2.1 ***Area of disturbance.*** You must minimize the amount of soil exposed during construction activities.

8.H.4.2.2 ***Erosion and sediment control design requirements.*** You must:

- Design, install and maintain effective erosion and sediment controls to minimize the discharge of pollutants from construction activities. Account for the following factors in designing your erosion and sediment controls:
- The expected amount, frequency, intensity and duration of precipitation;
- The nature of stormwater discharges and run-on at the site, including factors such as impervious surfaces, slopes and site drainage features;
- The range of soil particle sizes expected to be present on the site.
- Direct discharges from your stormwater controls to vegetated areas of your site to increase sediment removal and maximize stormwater infiltration, including any natural buffers, unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.
- If any stormwater flow becomes or will be channelized at your site, you must design erosion and sediment controls to control both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.
- If you install stormwater conveyance channels, they must be designed to avoid unstabilized areas on the site and to reduce erosion, unless infeasible. In addition, you must minimize erosion of channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

8.H.4.2.3 ***Natural Buffers.*** For any stormwater discharges from construction activities within 50 feet of a water of the U.S., you must comply with one of the following compliance alternatives:

1. Provide a 50-foot undisturbed natural buffer between construction activities and the water of the U.S.; or

2. Provide an undisturbed natural buffer that is less than 50 feet supplemented by additional erosion and sediment controls, which in combination, achieve a sediment load reduction that is equivalent to a 50-foot undisturbed natural buffer; or

3. If it is infeasible to provide an undisturbed natural buffer of any size, implement erosion and sediment controls that achieve a sediment load reduction that is equivalent to a 50-foot undisturbed natural buffer.

There are exceptions when buffer requirements do not apply:

- There is no stormwater discharge from construction disturbances to a water of the U.S;
- The natural buffer has already been eliminated by preexisting development disturbances;

- The disturbance is for the construction of a water-dependent structure or construction approved under a CWA section 404 permit;
- For linear construction projects, you are not required to comply with the requirements if there are site constraints provided that, to the extent feasible, you limit disturbances within 50 feet of a water of the U.S. and/or you provide supplemental erosion and sediment controls to treat stormwater discharges from any disturbances within 50 feet of a water of the U.S.

See EPA's industrial stormwater website under "Fact Sheets and Guidance" for information on complying with these alternatives: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities.

8.H.4.2.4 ***Soil or sediment stockpiles.*** In addition to the requirements in Part 8.H.4.1.5, you must locate any piles outside of any natural buffers established under Part 8.H.4.2.3.

8.H.4.2.5 ***Sediment basins.*** In addition to the requirements in Part 8.H.4.1.6, you must locate sediment basins outside of any surface waters and any natural buffers established under Part 8.H.4.2.3, and you must utilize outlet structures that withdraw water from the surface, unless infeasible.

8.H.4.2.6 ***Native topsoil preservation.*** *You must preserve native topsoil removed during clearing, grading, or excavation, unless infeasible. Store topsoil in a manner that will maximize its use in reclamation or final vegetative stabilization (e.g., by keeping the topsoil stabilized with seed or similar measures). This requirement does not apply if the intended function of the disturbed area dictates that topsoil be disturbed or removed.*

8.H.4.2.7 ***Steep slopes.*** You must minimize the disturbance of steep slopes. The permit does not prevent or prohibit disturbance on steep slopes.

Depending on site conditions and needs, disturbance on steep slopes may be necessary (e.g., a road cut in mountainous terrain; for grading steep slopes prior to erecting the mine office). Where steep slope disturbances are necessary, you can minimize the disturbances to steep slopes through the implementation of a number of standard erosion and sediment control practices, such as by phasing disturbances in these areas and using stabilization practices specifically for steep grades.

8.H.4.2.8 ***Soil compaction.*** Where final vegetative stabilization will occur or where infiltration practices will be installed, you must either restrict vehicle/equipment use in these areas to avoid soil compaction or use soil conditioning techniques to support vegetative growth. Minimizing soil compaction is not required where compacted soil is integral to the functionality of the site.

8.H.4.2.9 ***Dewatering Practices****. You are prohibited from discharging ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults or other similar points of accumulation, unless such waters are first effectively managed by appropriate controls (e.g., sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, or filtration systems). Uncontaminated, non-turbid dewatering water can be discharged without being routed to a control.*

(An uncontaminated discharge is a discharge that meets applicable water quality standards.)

You must also meet the following requirements for dewatering activities:

- Discharge requirements:
  - No discharging visible floating solids or foam;
  - Remove oil, grease and other pollutants from dewatering water via an oil-water separator or suitable filtration device (such as a cartridge filter);
  - Utilize vegetated upland areas of the site, to the extent feasible, to infiltrate dewatering water before discharge. In no case shall waters of the U.S. be considered part of the treatment area;
  - Implement velocity dissipation devices at all points where dewatering water is discharged;
  - Haul backwash water away for disposal or return it to the beginning of the treatment process; and
  - Clean or replace the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.
  - Treatment chemical restrictions: If you use polymers, flocculants or other chemicals to treat dewatering water, you must comply with the requirements in Parts 8.H.4.1.8.

8.H.4.2.10 *Pollution prevention requirements.*

- *Prohibited discharges* (this non-exhaustive list of prohibited non-stormwater discharges is included here as a reminder that only the only authorized non-stormwater discharges are those enumerated in Part 1.2.2):
  - Wastewater from washout of concrete;
  - Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
  - Fuels, oils, or other pollutants used for operation and maintenance of vehicles or equipment;
  - Soaps, solvents, or detergents used in vehicle or equipment washing;
  - Toxic or hazardous substances from a spill or other release.
- *Design and location requirements:* Minimize the discharge of pollutants from pollutant sources by:
  - Minimizing exposure;
  - Using secondary containment, spill kits, or other equivalent measures;
  - Locating pollution sources away from surface waters, storm sewer inlets, and drainageways;
  - Cleaning up spills immediately (do not clean by hosing area down).
- *Pollution prevention requirements for wash waters:* Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in

a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;

- *Pollution prevention requirements for the storage, handling, and disposal of construction products, materials, and wastes:* Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to stormwater. Minimization of exposure is not required in cases where the exposure to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

8.H.4.2.11 ***Site Stabilization requirements for the construction of staging areas for structures and access roads as defined in Part 8.H.3.2(b***) (i.e., not applicable to earth-disturbing activities performed for purposes of mine site preparation as defined in Part 8.H.3.2(a)). You must comply with the following stabilization requirements, except where the intended function of the site accounts for such disturbed earth (e.g., the area of construction will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- By no later than the end of the next work day after construction work in an area has stopped permanently or temporarily ("temporarily" means the land will be idle for a period of 14 days or more but earth-disturbing activities will resume in the future), immediately initiate stabilization measures;
- If using vegetative measures, by no later than 14 days after initiating stabilization:
  - Seed or plant the area, and provide temporary cover to protect the planted area;
  - Once established, vegetation must be uniform, perennial (if final stabilization), and cover at least 70% of stabilized area based on density of native vegetation.
- If using non-vegetative stabilization, by no later than 14 days after initiating stabilization:
  - Install or apply all non-vegetative measures;
  - Cover all areas of exposed soil.

Note: For the purposes of this permit, EPA will consider any of the following types of activities to constitute the initiation of stabilization: 1. Prepping the soil for vegetative or non-vegetative stabilization; 2. Applying mulch or other non-vegetative product to the exposed area; 3. Seeding or planting the exposed area; 4. Starting any of the activities in # 1 – 3 on a portion of the area to be stabilized, but not on the entire area; and 5. Finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization.

Exceptions:

- Arid, semi-arid (if construction occurs during seasonally dry period), or drought-stricken areas:
  - Within 14 days of stopping construction work in an area, install any necessary non-vegetative stabilization measures;
  - Initiate vegetative stabilization as soon as conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Plant the area so that within 3 years the 70% cover requirement is met.
- Sites affected by severe storm events or other unforeseen circumstances:
  - Initiate vegetative stabilization as soon conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Plant the area so that so that within 3 years the 70% cover requirement is met.

8.H.4.3 *Water Quality-Based Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following water quality-based limits apply to earth-disturbing activities conducted prior to active mining activities defined in Parts 8.H.3.2(a) and 8.H.3.2(b), in addition to the water quality-based limits in Part 2.2 of the MSGP.

Stricter requirements apply if your site will discharge to an impaired water or a water that is identified by your state, tribe, or EPA as a Tier 2 or Tier 2.5 for antidegradation purposes:

- More rapid stabilization of exposed areas: Complete initial stabilization activities within 7 days of stopping earth-disturbing work.
- More frequent site inspections: Once every 7 days and within 24 hours of a storm event of 0.25 inches or greater.

8.H.4.4 *Inspection Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following requirements supersede the inspections requirements in Part 3 and 8.H.7 of the MSGP for earth-disturbing activities conducted prior to active mining activities defined in Parts 8.H.3.2(a) and 8.H.3.2(b).

8.H.4.4.1 Inspection Frequency

- At least once every 7 calendar days, or
- Once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater.

Note:

- Inspections only required during working hours;
- Inspections not required during unsafe conditions; and
- If you choose to inspect once every 14 days, you must have a

method for measuring rainfall amount on site (either rain gauge or representative weather station)

Note: To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that.

Note: You are required to specify in your SWPPP which schedule you will be following.

Note: "Within 24 hours of the occurrence of a storm event" means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly in and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

8.H.4.4.2 Reductions in Inspection Frequency

- Stabilized areas: You may reduce the frequency of inspections to once per month in any area of your site where stabilization has occurred pursuant to Part 8.H.4.1.9 or 8.H.4.2.11.
- Arid, semi-arid, and drought stricken areas: If earth-disturbing activities are occurring during the seasonally dry period or during a period in which drought is predicted to occur, you may reduce inspections to once per month and within 24 hours of a 0.25 inch storm event.
- Frozen conditions: You may temporarily suspend or reduce inspections to once per month until thawing conditions occur if frozen conditions are continuous and disturbed areas have been stabilized. For extreme conditions in remote areas, e.g., where transit to the site is perilous/restricted or temperatures are routinely below freezing, you may suspend inspections until the conditions are conducive to safe access, and more frequent inspections can resume.

8.H.4.4.3 **Areas to be Inspected.** You must at a minimum inspect the following areas:

- Disturbed areas;
- Stormwater controls and pollution prevention measures;
- Locations where stabilization measures have been implemented;
- Material, waste, borrow, or equipment storage and maintenance areas;
- Areas where stormwater flows;
- Points of discharge.

8.H.4.4.4 ***What to Check for During Inspections***. At a minimum you must check:

- Whether all stormwater controls are installed, operational, and working as intended;
- Whether any new or modified stormwater controls are needed;
- For conditions that could lead to a spill or leak;
- For visual signs of erosion/sedimentation at points of discharge.

If a discharge is occurring:

- The quality and characteristics of the discharge (see Part 3.2.2.4);
- Whether controls are operating effectively.

8.H.4.4.5 **Inspection Report.** Within 24 hours of an inspection, complete a report that includes:

- Inspection date;
- Name and title of inspector(s);
- Summary of inspection findings;
- Rainfall amount that triggered the inspection (if applicable);
- If it was unsafe to inspect a portion of the site, include documentation of the reason and the location(s);
- Each inspection report must be signed;
- Keep a current copy of all reports at the site or at an easily accessible location.
- *Cessation of Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.* The requirements in 8.H.4 no longer apply for any earth- disturbing activities conducted prior to active mining activities as defined in 8.H.3.2(a) or 8.H.3.2(b) where:
- Earth-disturbing activities have ceased; and
- Stabilization has been met consistent with Part 8.H.4.1.9 or 8.H.4.2.11 (not required for areas where active mining activities will occur).

8.H.5 Technology-Based Effluent Limits for Active Mining Activities

Note: These requirements do not apply for any discharges from earth-disturbing activities conducted prior to active mining as defined in 8.H.3.2(a) or 8.H.3.2(b).

8.H.5.1 ***Good Housekeeping Measures.*** (See also Part 2.1.2.2) As part of your good housekeeping program, in order to minimize discharges of pollutants in stormwater, implement control measures such as the following, where determined to be feasible (list not inclusive): using sweepers and covered storage; watering haul roads to minimize dust generation; and conserving vegetation to minimize erosion. For mines subject to dust control requirements under state or county air quality permits, provided the requirements are equivalent, compliance with such air permit dust requirements shall constitute compliance with the dust control effluent limit in Part 2.1.2.10.

8.H.5.2 ***Preventive Maintenance.*** (See also Part 2.1.2.3) Perform inspections or other equivalent measures of storage tanks and pressure lines of fuels, lubricants, hydraulic fluid, and slurry to prevent leaks due to deterioration or faulty connections.

8.H.6 Additional SWPPP Requirements for Mining Operations

Note: The requirements in Part 8.H.6 are not applicable to inactive coal mining facilities.

8.H.6.1 ***Other Applicable Regulations.*** Most active coal mining-related areas (SIC Codes 1221- 1241) are subject to sediment and erosion control regulations of the U.S. Office of Surface Mining (OSM) that enforces the Surface Mining Control and Reclamation Act (SMCRA). OSM has granted authority to most coal-producing states to

implement SMCRA through State SMCRA regulations. All SMCRA requirements regarding control of stormwater-related pollutant discharges must be addressed and then documented with the SWPPP (directly or by reference).

8.H.6.2 ***Site Map.*** (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: haul and access roads; railroad spurs, sliding, and internal hauling lines; conveyor belts, chutes, and aerial tramways; equipment storage and maintenance yards; coal handling buildings and structures; inactive mines and related areas; acidic spoil, refuse, or unreclaimed disturbed areas; and liquid storage tanks containing pollutants such as caustics, hydraulic fluids, and lubricants.

8.H.6.3 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Document in your SWPPP the following sources and activities that have potential pollutants associated with them: truck traffic on haul roads and resulting generation of dust or sediment that could be discharged via stormwater; fuel or other liquid storage; pressure lines containing slurry, hydraulic fluid, or other potential harmful liquids; and loading or temporary storage of acidic refuse or spoil.

8.H.6.4 If you are in compliance with dust control requirements under state or county air quality permits, you must include (or summarize, as necessary) what the state or county air quality permit dust control requirements are and how you've achieved compliance with them.

8.H.7 Additional Inspection Requirements (See also Part 3.1)

8.H.7.1 ***Inspections of Active Mining-Related Areas.*** (See also Part 3) Except for earth-disturbing activities conducted prior to active mining activities as defined in Parts 8.H.3.2(a) and 8.H.3.2(b), which are subject to Part 8.H.4.4, perform routine inspections of active mining areas covered by this permit, corresponding with the inspections as performed by SMCRA inspectors, of all mining-related areas required by SMCRA. Also maintain the records of the SMCRA authority representative. See Part 8.H.9.1 for inspection requirements for inactive and unstaffed sties.

8.H.7.2 ***Sediment and Erosion Control.*** (See also Part 2.1.2.5) As indicated in Part 8.H.6.1, SMCRA requirements regarding sediment and erosion control measures must be complied with for those areas subject to SMCRA authority, including inspection requirements.

8.H.7.3 ***Routine Site Inspections. (See also Part 3.1***) Your inspection program must include inspections for pollutants entering the drainage system from activities located on or near coal mining-related areas. Among the areas to be inspected are haul and access roads; railroad spurs, sliding, and internal hauling lines; conveyor belts, chutes, and aerial tramways; equipment storage and maintenance yards; coal handling buildings and structures; and inactive mines and related areas.

8.H.8 Indicator Monitoring (See also Part 4.2.1)

Table 8.H-1 identifies indicator monitoring that applies to the specific subsectors of Sector H. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.H-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Applies to all Sector H (Subsector H1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector H1. Coal Mines and Coal Mining-Related Facilities (SIC Code 1221-1241)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.H.9 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.H-2 identifies benchmarks that apply to the specific subsectors of Sector H. These benchmarks apply to both your primary industrial activity and any co-located industrial activities. Note: There are no Part 8.H. 8 and 8.H.9 monitoring and reporting or impaired waters monitoring requirements for inactive and unstaffed sites.

Table 8.H-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector H1. Coal Mines and Related Areas (SIC 1221-1241)	Total Recoverable Aluminum	1,100 µg/L
	Total Suspended Solids (TSS)	100 mg/L

8.H.9.1 ***Inactive and Unstaffed Sites*** **– Conditional Exemption from No Exposure Requirement for Routine Inspections, Quarterly Visual Assessments, and Indicator, Benchmark and Impaired Waters Monitoring.** As a Sector H facility, if you are seeking to exercise a waiver from either the quarterly visual assessment or the indicator, benchmark, and/or impaired waters monitoring requirements for inactive and unstaffed sites (including temporarily inactive sites), you are conditionally exempt from the requirement to certify that "there are no industrial materials or activities exposed to stormwater" in Parts 3.2.4.4, 4.2.1.3, and 4.2.5.2. Additionally, if you are seeking to reduce your required routine inspection frequency, as is allowed under Part 3.1.5, you are also conditionally exempt from the requirement to certify that "there are no industrial materials or activities exposed to stormwater." These conditional exemptions are based on the following requirements:

- If circumstances change and your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the applicable benchmark monitoring requirements as if you were in your first year of permit coverage, and the quarterly visual assessment requirements; and

- EPA retains the authority to revoke this exemption and/or the monitoring waiver where it is determined that the discharge causes, has a reasonable potential to cause or contribute to an instream excursion above an applicable water quality standard, including designated uses.

Subject to the two conditions above, if your facility is inactive and unstaffed, you are waived from the requirement to conduct routine facility inspections, quarterly visual assessments, and benchmark and impaired waters monitoring. You must still conduct an annual site inspection in accordance with Part 3.1. You are encouraged to inspect your site more frequently where you have reason to believe that severe weather or natural disasters may have damaged control measures or increased discharges.

8.H.10 Termination of Permit Coverage

8.H.10.1 ***Termination of Permit Coverage for Sites Reclaimed After December 17, 1990.*** A site or a portion of a site that has been released from applicable state or federal reclamation requirements after December 17, 1990, is no longer required to maintain coverage under this permit. If the site or portion of a site reclaimed after December 17, 1990, was not subject to reclamation requirements, the site or portion of the site is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed as defined in Part 8.H.3.5.

8.H.10.2 ***Termination of Permit Coverage for Sites Reclaimed Before December 17, 1990.*** A site or portion of a site that was released from applicable state or federal reclamation requirements before December 17, 1990, or that was otherwise reclaimed before December 17, 1990, is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed. A site or portion of a site is considered to have been reclaimed if: (1) stormwater that comes into contact with raw materials, intermediate byproducts, finished products, and waste products does not have the potential to cause or contribute to violations of state water quality standards,

(2) soil disturbing activities related to mining at the sites or portion of the site have been completed, (3) the site or portion of the site has been stabilized to minimize soil erosion, and (4) as appropriate depending on location, size, and the potential to contribute pollutants to stormwater discharges, the site or portion of the site has been revegetated, will be amenable to natural revegetation, or will be left in a condition consistent with the post-mining land use.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart I – Sector I – Oil and Gas Extraction

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.I.1 Covered Stormwater Discharges.

The requirements in Subpart I apply to stormwater discharges associated with industrial activity from Oil and Gas Extraction facilities as identified by the SIC Codes specified under Sector I in Table D-1 of Appendix D of the permit.

8.I.1.1 Discharges of stormwater from field activities or operations associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities are exempt from NPDES permit coverage unless, in accordance with 40 CFR 122.26(c)(1)(iii), the facility:

- Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 117.21 or 40 CFR 302.6 at any time since November 16, 1987; or
- Has had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 CFR 110.6 at any time since November 16, 1987; or
- Contributes to a violation of a water quality standard.

Any stormwater discharges that require permit coverage as a result of meeting one of the conditions of 122.26(c)(1)(iii) may be covered under this permit unless otherwise required to obtain coverage under an alternative NPDES general permit or an individual NPDES permit as specified in Part 1.3.8.

8.I.2 Limitations on Coverage

8.I.2.1 ***Stormwater Discharges Subject to Effluent Limitation Guidelines.*** (See also Part 4.2.3) This permit does not authorize stormwater discharges from drilling operations that are subject to nationally established effluent limitation guidelines found at 40 CFR Part 435, respectively.

8.I.2.2 ***Non-Stormwater Discharges. Discharges of vehicle and equipment wash water, including tank cleaning operations, are not authorized by this permit.*** Alternatively, wash water discharges must be authorized under a separate NPDES permit, or be discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements. (EPA includes this prohibited non-stormwater discharge here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2).

8.I.3 Additional Technology-Based Effluent Limits

8.I.3.1 ***Vegetative Controls.*** Implement vegetative practices designed to preserve existing vegetation, where attainable, and revegetate open areas as soon as practicable after grade drilling. Implement appropriate vegetative practices, such as the following (list

not exclusive): temporary or permanent seeding, mulching, sod stabilization, vegetative buffer strips, and tree protection practices. Begin implementing appropriate vegetative practices on all disturbed areas within 14 days following the last activity in that area.

8.I.4 Additional SWPPP Requirements

8.I.4.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: Reportable Quantity (RQ) releases; locations used for the treatment, storage, or disposal of wastes; processing areas and storage areas; chemical mixing areas; construction and drilling areas; all areas subject to the effluent guidelines requirements for "No Discharge" in accordance with 40 CFR 435.32; and the structural controls to achieve compliance with the "No Discharge" requirements.

8.I.4.2 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Also document in your SWPPP the following sources and activities that have potential pollutants associated with them: chemical, cement, mud, or gel mixing activities; drilling or mining activities; and equipment cleaning and rehabilitation activities. In addition, include information about the reportable quantity (RQ) release that triggered the permit application requirements: the nature of the release (e.g., spill of oil from a drum storage area), amount of oil or hazardous substance released, amount of substance recovered, date of the release, cause of the release (e.g., poor handling techniques and lack of containment in the area), areas affected by the release (i.e., land and water), procedures to clean up release, actions or procedures implemented to prevent or improve response to a release, and remaining potential contamination of stormwater from release (taking into account human health risks, the control of drinking water intakes, and the designated uses of the receiving water).

8.I.4.3 ***Erosion and Sediment Controls.*** (See also Part 2.1.2.5) Unless covered by EPA's Construction General Permit (CGP), the additional documentation requirements for sediment and erosion controls for well drillings and sand/shale mining areas include the following:

8.I.4.3.1 ***Site Description.*** Also include a description in your SWPPP of the nature of the exploration activity, estimates of the total area of site and area disturbed due to exploration activity, an estimate of runoff coefficient of the site, a site drainage map, including approximate slopes, and the names of all receiving waters.

8.I.4.3.2 ***Vegetative Controls****. Document vegetative practices used consistent with Part 8.I.3.1 in the SWPPP.*

8.I.5 Additional Inspection Requirements

All erosion and sediment controls must be inspected either: 1) every 7 days; or 2) once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater.

8.I.6 Indicator Monitoring (See also Part 4.2.1)

Table 8.I-1 identifies indicator monitoring that applies to the specific subsectors of Sector I. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.I-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Applies to all Sector I (Subsector I1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector I1. Crude Petroleum and Natural Gas (SIC Code 1311); Natural Gas Liquids (SIC Code 1321); Oil and Gas Field Services (SIC Code 1381-1389)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values
	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart J – Sector J – Non-Metallic Mineral Mining and Dressing

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

Note: Where compliance with a requirement in a separate exploration permit, mining permit, reclamation plan, Surface Mining Control and Reclamation Act (SMCRA) requirements, etc. will result in you fully meeting any requirement in this Subpart, you are considered to have complied with the relevant requirement in this Subpart. You must include documentation in your SWPPP describing your rationale for concluding that any particular action on your part is sufficient to comply with the corresponding requirement in this Subpart.

8.J.1 Covered Stormwater Discharges

The requirements in Subpart J apply to stormwater discharges associated with industrial activity from Active and Inactive Non-Metallic Mineral Mining and Dressing facilities as identified by the SIC Codes specified under Sector J in Table D-1 of Appendix D of the permit.

8.J.1.1 ***Covered Discharges from Inactive Facilities.*** All stormwater discharges.

8.J.1.2 ***Covered Discharges from Active and Temporarily Inactive Facilities.*** All stormwater discharges, except for most stormwater discharges subject to the existing effluent limitation guideline at 40 CFR Part 436. Mine dewatering discharges composed entirely of stormwater or uncontaminated ground water seepage from: construction sand and gravel, industrial sand, and crushed stone mining facilities.

8.J.1.3 ***Covered Discharges from Earth-Disturbing Activities Conducted Prior to Active Mining Activities. All stormwater discharges.***

8.J.1.4 ***Covered Discharges from Sites Undergoing Reclamation. All stormwater discharges.***

8.J.2 Limitations on Coverage.

Most stormwater discharges subject to an existing effluent limitation guideline at 40 CFR Part 436 are not authorized by this permit. The exceptions to this limitation, which are covered by this permit, are mine dewatering discharges composed entirely of stormwater or uncontaminated ground water seepage from construction sand and gravel, industrial sand, and crushed stone mining facilities.

8.J.3 Definitions

The following definitions are not intended to supersede the definitions of active and inactive mining facilities established by 40 CFR 122.26(b)(14)(iii).

8.J.3.1 ***Mining operations*** – For this permit, mining operations are grouped into two distinct categories, with distinct effluent limits and requirements applicable to each: a) earth-disturbing activities conducted prior to active mining activities); and b) active mining activities, which includes reclamation. "Mining operations" can occur at both inactive mining facilities and temporarily inactive mining facilities.

8.J.3.2 ***Earth-disturbing activities conducted prior to active mining activities*** – Consists of two classes of earth-disturbing (i.e., clearing, grading and excavation) activities:

a. activities performed for purposes of mine site preparation, including: cutting new rights of way (except when related to access road construction); providing access to a mine site for vehicles and equipment (except when related to access road construction); other earth disturbances associated with site preparation activities on any areas where active mining activities have not yet commenced (e.g., for heap leach pads, waste rock facilities, tailings impoundments, wastewater treatment plants); and

b. construction of staging areas to prepare for erecting structures such as to house project personnel and equipment, mill buildings, etc., and construction of access roads. Earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining are considered to be "construction" and have additional effluent limits in Part 8.J.4.2.

8.J.3.3 ***Active mining activities*** – Activities related to the extraction, removal or recovery, and beneficiation of non-metallic minerals from the earth; removal of overburden and waste rock to expose mineable minerals; and site reclamation and closure activities. All such activities occur within the "active mining area." Reclamation involves activities undertaken, in compliance with applicable mined land reclamation requirements, to return the land to an appropriate post-mining contour and land use in order to meet applicable federal and state reclamation requirements. In addition, once earth- disturbing activities conducted prior to active mining activities have ceased and all related requirements in Part 8.J.4 have been met, and a well-delineated "active mining area" has been established, all activities (including any clearing, grading, and excavation) that occur within the active mining area are "active mining activities

8.J.3.4 ***Active mining area*** – A place where work or other activity related to the extraction, removal or recovery of non-metallic minerals is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.

Note: Earth-disturbing activities described in the definition in Part 8.J.3.2 that occur on areas outside the active mining area (e.g., for expansion of the mine into undeveloped territory) are considered "earth-disturbing conducted prior to active mining activities", and must comply with the requirements in Part 8.J.4.

8.J.3.5 ***Inactive mineral mining facility*** – A site or portion of a site where mineral mining and/or milling occurred in the past but there are no active mining activities occurring as defined above, and where the inactive portion is not covered by an active mining permit issued by the applicable state or federal agency. An inactive mineral mining facility has an identifiable owner / operator. Sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials, and sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim are not considered either active or inactive mining facilities and do not require an NPDES industrial stormwater permit.

8.J.3.6 ***Temporarily inactive mineral mining facility*** – A site or portion of a site where non-metallic mineral mining and/or milling occurred in the past but currently are not

being actively undertaken, and the facility is covered by an active mining permit issued by the applicable state or federal agency.

8.J.4 Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities

Stormwater discharges from earth-disturbing activities conducted prior to active mining activities (defined in Part 8.J.3.2) are covered under this permit. For such earth-disturbing activities, you must comply with all applicable requirements in Parts 1-9 of the MSGP except for the technology-based effluent limits in Part 8.J.5 and Part 2.1.2, the inspection requirements in Part 8.J.7 and Part 3, and the monitoring requirements in Part 8.J.8, Part 8.J.9, and Part 4.

Authorized discharges from areas where earth-disturbing activities have ceased and stabilization as specified in Part 8.J.4.1.9 or 8.J.4.2.11, where appropriate, has been completed (stabilization is not required for areas where active mining activities will occur), are no longer subject to the Part 8.J.4 requirements. At such time, authorized discharges become subject to all other applicable requirements in the MSGP, including the effluent limits in Parts 2.1.2 and 8.J.5, the inspection requirements in Parts 3 and 8.J.7, and the monitoring requirements in Parts 4, 8.J.8, and 8.J.9.

8.J.4.1 ***Technology-Based Effluent Limits Applicable to All Earth-Disturbing Activities Conducted Prior to Active mining Activities.*** The following technology-based effluent limits apply to authorized discharges from all earth-disturbing activities conducted prior to active mining activities defined in Part 8.J.3.2(a) and 8.J.3.2(b). These limits supersede the technology-based limits listed in Part 2.1.2 and Part 8.J.5 of the MSGP.

8.J.4.1.1 Erosion and sediment control installation requirements.

- By the time construction activities commence, install and make operational downgradient sediment controls, unless this timeframe is infeasible. If infeasible you must install and make such controls operational as soon as practicable or as soon as site conditions permit.
- All other stormwater controls described in the SWPPP must be installed and made operational as soon as conditions on each portion of the site allows.

8.J.4.1.2 Erosion and sediment control maintenance requirements. You must:

- Ensure that all erosion and sediment controls remain in effective operating condition.
- Wherever you determine that a stormwater control needs maintenance to continue operating effectively, initiate efforts to fix the problem immediately after its discovery, and complete such work by the end of the next work day.
- When a stormwater control must be replaced or significantly repaired, complete the work within 7 days, unless infeasible. If 7 days is infeasible, you must complete the installation or repair as soon as practicable.

8.J.4.1.3 Perimeter controls. You must:

- Install sediment controls along those perimeter areas of your disturbed area that will receive stormwater, except where site conditions prevent the use of such controls (in which case, maximize their installation to the extent practicable).

- Remove sediment before it accumulates to one-half of the above-ground height of any perimeter control.

8.J.4.1.4 ***Sediment track-out.*** For construction vehicles and equipment exiting the site directly onto paved roads, you must:

- Use appropriate stabilization techniques to minimize sediment track-out from vehicles and equipment prior to exit;
- Use additional controls to remove sediment from vehicle and equipment tires prior to exit, where necessary;
- Remove sediment that is tracked out onto paved roads by end of the work day.

Note: EPA recognizes that some fine grains may remain visible on the surfaces of off-site streets, other paved areas, and sidewalks even after you have implemented sediment removal practices. Such "staining" is not a violation of Part 8.J.4.1.4.

8.J.4.1.5 ***Soil or sediment stockpiles.*** You must:

- Minimize erosion of stockpiles from stormwater and wind via temporary cover, if feasible.
- Prevent up-slope stormwater flows from causing erosion of stockpiles (e.g., by diverting flows around the stockpile).
- Minimize sediment from stormwater that runs off of stockpiles, using sediment controls (e.g., a sediment barrier or downslope sediment control).

8.J.4.1.6 ***Sediment basins****. If you intend to install a sediment basin to treat stormwater from your earth-disturbing activities, you must:*

- Provide storage for either (1) the 2-year, 24-hour storm, or (2) 3,600 cubic feet per acre drained.
- Prevent erosion of (1) basin embankments using stabilization controls (e.g., erosion control blankets), and (2) the inlet and outlet points of the basin using erosion controls and velocity dissipation devices.

8.J.4.1.7 ***Minimize dust.*** You must minimize the generation of dust through the appropriate application of water or other dust suppression techniques that minimize pollutants being discharged into surface waters.

8.J.4.1.8 ***Restrictions on use of treatment chemicals.*** If you intend to use sediment treatment chemicals at your site, you are subject to the following minimum requirements:

- Use conventional erosion and sediment controls prior to and after application of chemicals;
- Select chemicals suited to soil type, and expected turbidity, pH, flow rate;
- Minimize the discharge risk from stored chemicals;
- Comply with state/local requirements;
- Use chemicals in accordance with good engineering practices and specifications of chemical supplier;
- Ensure proper training;
- Provide proper SWPPP documentation.

If you plan to use cationic treatment chemicals (as defined in Appendix A), you are ineligible for coverage under this permit, unless you notify your applicable EPA Regional Office in advance and the EPA Regional Office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

8.J.4.1.9 ***Site stabilization requirements for earth-disturbing activities performed for purposes of mine site preparation as defined in 8.J.3.2(a)*** (i.e., not applicable to construction of staging areas for structures and access roads as defined in 8.J.3.2(b)). You must comply with the following stabilization requirements except where the intended function of the site accounts for such disturbed earth (e.g., the earth disturbances will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- *Temporary stabilization of disturbed areas.* Stabilization measures must be initiated immediately in portions of the site where earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.J.3.2(a)) have temporarily ceased, but in no case more than 14 days after such activities have temporarily ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities performed for purposes of mine site preparation has temporarily ceased, temporary vegetative stabilization measures must be initiated as soon as practicable. Until temporary vegetative stabilization is achieved, interim measures such as erosion control blankets with an appropriate seed base and tackifiers must be employed. In areas of the site where earth-disturbing activities performed for purposes of mine site preparation have permanently ceased prior to active mining, temporary stabilization measures must be implemented to minimize mobilization of sediment or other pollutants until active mining activities commence.
- *Final stabilization of disturbed areas.* Stabilization measures must be initiated immediately where earth-disturbing activities performed for purposes of mine site preparation (as defined in 8.J.3.2(a)) have permanently ceased, but in no case more than 14 days after the earth- disturbing activities have permanently ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities have permanently ceased, final vegetative stabilization measures must be initiated as soon as possible. Until final stabilization is achieved, temporary stabilization measures, such as erosion control blankets with an appropriate seed base and tackifiers, must be used.

8.J.4.2 ***Additional Technology-Based Effluent Limits Applicable Only to the Construction of Staging Areas for Structures and Access Roads.*** The following technology-based effluent limits apply to authorized discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads, as defined in Part 8.J.3.2(b). These limits supersede the technology-based limits listed in Part 2.1.2 and Part 8.J.5 of the MSGP. These limits do not apply to earth-

disturbing activities performed for purposes of mine site preparation (as defined in 8.J.3.2(a)).

8.J.4.2.1 ***Area of disturbance***. You must minimize the amount of soil exposed during construction activities.

8.J.4.2.2 ***Erosion and sediment control design requirements.*** You must:

- Design, install and maintain effective erosion and sediment controls to minimize the discharge of pollutants from construction activities. Account for the following factors in designing your erosion and sediment controls:
  - The expected amount, frequency, intensity and duration of precipitation;
  - The nature of stormwater discharges and run-on at the site, including factors such as impervious surfaces, slopes and site drainage features;
  - The range of soil particle sizes expected to be present on the site.
- Direct discharges from your stormwater controls to vegetated areas of your site to increase sediment removal and maximize stormwater infiltration, including any natural buffers, unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.
- If any stormwater flow becomes or will be channelized at your site, you must design erosion and sediment controls to control both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.
- If you install stormwater conveyance channels, they must be designed to avoid unstabilized areas on the site and to reduce erosion, unless infeasible. In addition, you must minimize erosion of channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

8.J.4.2.3 ***Natural Buffers***. For any stormwater discharges from construction activities within 50 feet of a water of the U.S., you must comply with one of the following compliance alternatives:

1. Provide a 50-foot undisturbed natural buffer between construction activities and the water of the U.S.; or

2. Provide an undisturbed natural buffer that is less than 50 feet supplemented by additional erosion and sediment controls, which in combination, achieve a sediment load reduction that is equivalent to a 50-foot undisturbed natural buffer; or

3. If it is infeasible to provide an undisturbed natural buffer of any size, implement erosion and sediment controls that achieve a sediment load reduction that is equivalent to a 50-foot undisturbed natural buffer.

There are exceptions when buffer requirements do not apply:

- There is no stormwater discharge from construction disturbances to a water of the U.S;
- The natural buffer has already been eliminated by preexisting development disturbances;
- The disturbance is for the construction of a water-dependent structure or construction approved under a CWA section 404 permit;
- For linear construction projects, you are not required to comply with the requirements if there are site constraints provided that, to the extent feasible, you limit disturbances within 50 feet of a water of the U.S. and/or you provide supplemental erosion and sediment controls to treat stormwater discharges from any disturbances within 50 feet of a water of the U.S.

See EPA's industrial stormwater website under "Fact Sheets and Guidance" for information on complying with these alternatives: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities.

8.J.4.2.4 ***Soil or sediment stockpiles***. In addition to the requirements in Part 8.J.4.1.5, you must locate any piles outside of any natural buffers established under Part 8.J.4.2.3.

8.J.4.2.5 ***Sediment basins***. In addition to the requirements in Part 8.J.4.1.6, you must locate sediment basins outside of any surface waters and any natural buffers established under Part 8.J.4.2.3, and you must utilize outlet structures that withdraw water from the surface, unless infeasible.

8.J.4.2.6 ***Native topsoil preservation.*** You must preserve native topsoil removed during clearing, grading, or excavation, unless infeasible. Store topsoil in a manner that will maximize its use in reclamation or final vegetative stabilization (e.g., by keeping the topsoil stabilized with seed or similar measures). This requirement does not apply if the intended function of the disturbed area dictates that topsoil be disturbed or removed.

8.J.4.2.7 ***Steep slopes.*** You must minimize the disturbance of steep slopes. The permit does not prevent or prohibit disturbance on steep slopes.

Depending on site conditions and needs, disturbance on steep slopes may be necessary (e.g., a road cut in mountainous terrain; for grading steep slopes prior to erecting the mine office). Where steep slope disturbances are necessary, you can minimize the disturbances to steep slopes through the implementation of a number of standard erosion and sediment control practices, such as by phasing disturbances in these areas and using stabilization practices specifically for steep grades.

8.J.4.2.8 **Soil compaction.** Where final vegetative stabilization will occur or where infiltration practices will be installed, you must either restrict vehicle/ equipment use in these areas to avoid soil compaction or use soil conditioning techniques to support vegetative growth. Minimizing soil compaction is not required where compacted soil is integral to the functionality of the site.

8.J.4.2.9 **Dewatering Practices.** You are prohibited from discharging ground water or accumulated stormwater that is removed from excavations, trenches,

foundations, vaults or other similar points of accumulation, unless such waters are first effectively managed by appropriate controls (e.g., sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, or filtration systems). Uncontaminated, non-turbid dewatering water can be discharged without being routed to a control. (An uncontaminated discharge is a discharge that meets applicable water quality standards.)

You must also meet the following requirements for dewatering activities:

- Discharge requirements:
  - No discharging visible floating solids or foam;
  - Remove oil, grease and other pollutants from dewatering water via an oil-water separator or suitable filtration device (such as a cartridge filter);
  - Utilize vegetated upland areas of the site, to the extent feasible, to infiltrate dewatering water before discharge. In no case shall waters of the U.S. be considered part of the treatment area;
  - Implement velocity dissipation devices at all points where dewatering water is discharged;
  - Haul backwash water away for disposal or return it to the beginning of the treatment process; and
  - Clean or replace the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.
- Treatment chemical restrictions: If you use polymers, flocculants or other chemicals to treat dewatering water, you must comply with the requirements in Parts 8.J.4.1.8.

8.J.4.2.10 *Pollution prevention requirements.*

- *Prohibited discharges* (this non-exhaustive list of prohibited non-stormwater discharges is included here as a reminder that only the only authorized non-stormwater discharges are those enumerated in Part 1.2.2):
  - Wastewater from washout of concrete;
  - Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials;
  - Fuels, oils, or other pollutants used for operation and maintenance of vehicles or equipment;
  - Soaps, solvents, or detergents used in vehicle or equipment washing;
  - Toxic or hazardous substances from a spill or other release.
- *Design and location requirements:* Minimize the discharge of pollutants from pollutant sources by:
  - Minimizing exposure;
  - Using secondary containment, spill kits, or other equivalent measures;
  - Locating pollution sources away from surface waters, storm sewer inlets, and drainageways;
  - Cleaning up spills immediately (do not clean by hosing area

down).

- *Pollution prevention requirements for wash waters:* Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- *Pollution prevention requirements for the storage, handling, and disposal of construction products, materials, and wastes:* Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to stormwater. Minimization of exposure is not required in cases where the exposure to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

8.J.4.2.11 ***Site Stabilization requirements for the construction of staging areas for structures and access roads as defined in 8.J.3.2(b)*** (i.e., not applicable to earth-disturbing activities performed for purposes of mine site preparation as defined in 8.J.3.2(a)). You must comply with the following stabilization requirements, except where the intended function of the site accounts for such disturbed earth (e.g., the area of construction will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- By no later than the end of the next work day after construction work in an area has stopped permanently or temporarily ("temporarily" means the land will be idle for a period of 14 days or more but earth-disturbing activities will resume in the future), immediately initiate stabilization measures;
- If using vegetative measures, by no later than 14 days after initiating stabilization:
  - Seed or plant the area, and provide temporary cover to protect the planted area;
  - Once established, vegetation must be uniform, perennial (if final stabilization), and cover at least 70% of stabilized area based on density of native vegetation.
- If using non-vegetative stabilization, by no later than 14 days after initiating stabilization:
  - Install or apply all non-vegetative measures;
  - Cover all areas of exposed soil.

Note: For the purposes of this permit, EPA will consider any of the following types of activities to constitute the initiation of stabilization: 1. Prepping the soil for vegetative or non-vegetative stabilization; 2. Applying mulch or other non- vegetative product to the exposed area; 3. Seeding or planting the exposed area; 4. Starting any of the activities in # 1 – 3 on a portion of the area to be stabilized, but not on the entire area; and 5. Finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization.

Exceptions:

- Arid, semi-arid (if construction occurs during seasonally dry period), or drought-stricken areas:
  - Within 14 days of stopping construction work in an area, install any necessary non-vegetative stabilization measures;
  - Initiate vegetative stabilization as soon as conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Plant the area so that within 3 years the 70% cover requirement is met.
- Sites affected by severe storm events or other unforeseen circumstances:
  - Initiate vegetative stabilization as soon conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Plant the area so that so that within 3 years the 70% cover requirement is met.

8.J.4.3 *Water Quality-Based Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following water quality-based limits apply to earth-disturbing activities conducted prior to active mining activities defined in Parts 8.J.3.2(a) and 8.J.3.2(b), in addition to the water quality-based limits in Part 2.2 of the MSGP.

Stricter requirements apply if your site will discharge to an impaired water or a water that is identified by your state, tribe, or EPA as a Tier 2 or Tier 2.5 for antidegradation purposes:

- More rapid stabilization of exposed areas: Complete initial stabilization activities within 7 days of stopping construction work.
- More frequent site inspections: Once every 7 days and within 24 hours of a storm event of 0.25 inches or greater.

8.J.4.4 *Inspection Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following requirements supersede the inspections requirements in Part 3 and 8.J.7 of the MSGP for earth-disturbing activities conducted prior to active mining activities defined in Parts 8.J.3.2(a) and 8.J.3.2(b).

8.J.4.4.1 Inspection Frequency

- At least once every 7 calendar days, or
- Once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater.

Note: Inspections only required during working hours;

- Inspections not required during unsafe conditions; and

- If you choose to inspect once every 14 days, you must have a method for measuring rainfall amount on site (either rain gauge or representative weather station)

Note: To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day.

Note: You are required to specify in your SWPPP which schedule you will be following.

Note: "Within 24 hours of the occurrence of a storm event" means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

8.J.4.4.2 *Reductions in Inspection Frequency*

- Stabilized areas: You may reduce the frequency of inspections to once per month in any area of your site where stabilization has occurred pursuant to Part 8.J.4.1.9 or Part 8.J.4.2.11.
- Arid, semi-arid, and drought stricken areas: If earth-disturbing activities are occurring during the seasonally dry period or during a period in which drought is predicted to occur, you may reduce inspections to once per month and within 24 hours of a 0.25 inch storm event.
- Frozen conditions: You may temporarily suspend or reduce inspections to once per month until thawing conditions occur if frozen conditions are continuous and disturbed areas have been stabilized. For extreme conditions in remote areas, e.g., where transit to the site is perilous/restricted or temperatures are routinely below freezing, you may suspend inspections until the conditions are conducive to safe access, and more frequent inspections can resume.

8.J.4.4.3 **Areas to be Inspected.** ***You must at a minimum inspect the all of the following areas:***

- Disturbed areas;
- Stormwater controls and pollution prevention measures;
- Locations where stabilization measures have been implemented;
- Material, waste, borrow, or equipment storage and maintenance areas;
- Areas where stormwater flows;
- Points of discharge.

8.J.4.4.4 ***What to Check for During Inspections.*** At a minimum you must check:

- Whether all stormwater controls are installed, operational and working as intended;

- Whether any new or modified stormwater controls are needed;
- For conditions that could lead to a spill or leak;
- For visual signs of erosion/sedimentation at points of discharge. If a discharge is occurring:
- The quality and characteristics of the discharge (see Part 3.2.2.4);
- Whether controls are operating effectively.

8.J.4.4.5 ***Inspection Report.*** Within 24 hours of an inspection, complete a report that includes:

- Inspection date;
- Name and title of inspector(s);
- Summary of inspection findings;
- Rainfall amount that triggered the inspection (if applicable);
- If it was unsafe to inspect a portion of the site, include documentation of the reason and the location(s);
- Each inspection report must be signed;
- Keep a current copy of all reports at the site or at an easily accessible location.

8.J.4.5 ***Cessation of Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*** The requirements in 8.J.4 no longer apply for any earth-disturbing activities conducted prior to active mining activities as defined in 8.J.3.2(a) or 8.J.3.2(b) where:

1. Earth-disturbing activities have ceased; and
2. Stabilization has been met consistent with Part 8.J.4.1.9 or Part 8.J.4.2.11 (not required for areas where active mining activities will occur).

8.J.5 **Technology-Based Effluent Limits for Active Mining Activities**

Note: These requirements do not apply for any discharges from earth-disturbing activities conducted prior to active-mining as defined in 8.J.3.2(a) or 8.J.3.2(b).

8.J.5.1 ***Employee Training.*** Conduct employee training at least annually at active and temporarily inactive sites. (See also Part 2.1.2.8).

8.J.5.2 ***Stormwater Controls.*** Apart from the control measures you implement to meet your Part 2 effluent limits, where necessary to minimize pollutant discharges in stormwater, implement the following control measures at your site. The potential pollutants identified in Part 8.J.6.3 shall determine the priority and appropriateness of the control measures selected.

Stormwater Diversions: Divert stormwater away from potential pollutant sources through implementation of control measures such as the following, where determined to be feasible (list not exclusive): interceptor or diversion controls (e.g., dikes, swales, curbs, berms); pipe slope drains; subsurface drains; conveyance systems (e.g., channels or gutters, open-top box culverts, and waterbars; rolling dips and road sloping; roadway surface water deflector and culverts); or their equivalents. For mines subject to dust control requirements under state or county air quality permits, provided the requirements are equivalent, compliance with such air permit dust requirements shall constitute compliance with the dust control effluent limit in Part 2.1.2.10.

Capping: When capping is necessary to minimize pollutant discharges in stormwater, identify the source being capped and the material used to construct the cap.

Treatment: If treatment of stormwater (e.g., chemical or physical systems, oil and water separators, artificial wetlands) is necessary to protect water quality, describe the type and location of treatment used. Passive and/or active treatment of stormwater is encouraged. Treated stormwater may be discharged as a stormwater source regulated under this permit provided the discharge is not combined with discharges subject to effluent limitation guidelines for the Mineral Mining and Processing Point Source Category (40 CFR Part 436).

8.J.5.3 ***Discharge Testing.*** (See also Part 6.2.3.4) Test or evaluate all discharge points covered under this permit for the presence of specific mining-related but unauthorized non-stormwater discharges such as discharges subject to effluent limitations guidelines (e.g., 40 CFR Part 436). Alternatively (if applicable), you may keep a certification with your SWPPP, per Part 8.J.6.6.

8.J.6 Additional SWPPP Requirements for Mining Operations

Note: The requirements in Part 8.J.6 are not applicable to inactive mineral mining facilities.

8.J.6.1 ***Nature of Industrial Activities.*** (See also Part 6.2.2) Document in your SWPPP the mining and associated activities that can potentially affect the stormwater discharges covered by this permit, including a general description of the location of the site relative to major transportation routes and communities.

8.J.6.2 ***Site Map***. (See also Part 6.2.2) Document in your SWPPP the locations of the following (as appropriate): mining or milling site boundaries; access and haul roads; outline of the drainage areas of each stormwater discharge points within the facility with indications of the types of discharges from the drainage areas; location(s) of all permitted discharges covered under an individual NPDES permit; outdoor equipment storage, fueling, and maintenance areas; materials handling areas; outdoor manufacturing, outdoor storage, and material disposal areas; outdoor chemicals and explosives storage areas; overburden, materials, soils, or waste storage areas; location of mine drainage dewatering or other process water; heap leach pads; off-site points of discharge for mine dewatering and process water; surface waters; boundary of tributary areas that are subject to effluent limitations guidelines; and location(s) of reclaimed areas.

8.J.6.3 ***Potential Pollutant Sources.*** (See also Part 6.2.3) For each area of the mine or mill site where stormwater discharges associated with industrial activities occur, document in your SWPPP the types of pollutants (e.g., heavy metals, sediment) likely to be present in significant amounts. For example, phosphate mining facilities will likely need to document pollutants such as selenium, which can be present in significant amounts in their discharges. Consider these factors: the mineralogy of the waste rock (e.g., acid forming); toxicity and quantity of chemicals used, produced, or discharged; the likelihood of contact with stormwater; vegetation of site (if any); and history of significant leaks or spills of toxic or hazardous pollutants. Also include a summary of any existing waste rock or overburden characterization data and test results for potential generation of acid rock drainage.

8.J.6.4 ***Documentation of Control Measures.*** To the extent that you use any of the control measures in Part 8.J.5.2, document them in your SWPPP per Part 6.2.4. If control

measures are implemented or planned but are not listed here (e.g., substituting a less toxic chemical for a more toxic one), include descriptions of them in your SWPPP. If you are in compliance with dust control requirements under state or county air quality permits, you must state (or summarize, as necessary) what the state or county air quality permit dust control requirements are and how you've achieved compliance with them.

8.J.6.5 ***Employee Training***. All employee training(s) conducted in accordance with Part 8.J.5.1 must be documented with the SWPPP.

8.J.6.6 ***Certification of Permit Coverage for Commingled Non-Stormwater Discharges***. If you determine that you are able to certify, consistent with Part 8.J.5.3, that a particular discharge composed of commingled stormwater and non-stormwater is covered under a separate NPDES permit, and that permit subjects the non-stormwater portion to effluent limitations prior to any commingling, you must retain such certification with your SWPPP. This certification must identify the non-stormwater discharges, the applicable NPDES permit(s), the effluent limitations placed on the non-stormwater discharge by the permit(s), and the points at which the limitations are applied.

8.J.7 Additional Inspection Requirements (See also Part 3.1)

Except for earth-disturbing activities conducted prior to active mining activities as defined in Part 8.J.3.2(a) and Part 8.J.3.2(b), which are subject to Part 8.J.4.4, perform inspections at least quarterly unless adverse weather conditions make the site inaccessible. Sites which discharge to waters which are designated as Tier 2 or 2.5 or waters which are impaired for sediment or nitrogen must be inspected monthly. See Part 8.J.9.1 for inspection requirements for inactive and unstaffed sites.

8.J.8 Indicator Monitoring (See also Part 4.2.1)

Table 8.J-1 identifies indicator monitoring that applies to the specific subsectors of Sector J. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.J-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector J (Subsectors J1, J2, and J3) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector J3. Clay, Ceramic, and Refractory Materials (SIC Code 1455, 1459); Chemical and Fertilizer Mineral Mining (SIC Code 1474-1479)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.J.9 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.J-2 identifies benchmarks that apply to the specific subsectors of Sector J. These benchmarks apply to both your primary industrial activity and any co-located industrial activities. Note: There are no Part 8.J.9 monitoring and reporting or impaired waters monitoring requirements for inactive and unstaffed sites.

Table 8.J-2.

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Subsector J1. Sand and Gravel Mining (SIC 1442, 1446)	Nitrate plus Nitrite Nitrogen	0.68 mg/L
	Total Suspended Solids (TSS)	100 mg/L
Subsector J2. Dimension and Crushed Stone and Nonmetallic Minerals (except fuels) (SIC 1411, 1422-1429, 1481, 1499)	Total Suspended Solids (TSS)	100 mg/L

8.J.9.1 ***Inactive and Unstaffed Sites* – Conditional Exemption from No Exposure Requirement for Routine Inspections, Quarterly Visual Assessments, and Indicator, Benchmark, and Impaired Waters Monitoring.** As a Sector J facility, if you are seeking to exercise a waiver from either the routine inspection, quarterly visual assessment or the indicator, benchmark and/or impaired monitoring requirements for inactive and unstaffed sites (including temporarily inactive sites), you are conditionally exempt from the requirement to certify that "there are no industrial materials or activities exposed to stormwater" in Parts 3.1.5, 3.2.4.4, 4.2.1.3, and 4.2.5.2. This exemption is conditioned on the following:

- If circumstances change and your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the applicable benchmark monitoring requirements as if you were in your first year of permit coverage, and the quarterly visual assessment requirements; and
- EPA retains the authority to revoke this exemption and/or the monitoring waiver where it is determined that the discharge causes, has a reasonable potential to cause, or contributes to an instream excursion above an applicable water quality standard, including designated uses.

Subject to the two conditions above, if your facility is inactive and unstaffed, you are waived from the requirement to conduct routine facility inspections, quarterly visual assessments, and benchmark and impaired waters monitoring. You must still conduct an annual site inspection in accordance with Part 3.1. You are encouraged to inspect your site more frequently where you have reason to believe that severe weather or natural disasters may have damaged control measures or increased discharges.

8.J.10 Effluent Limitations Based on Effluent Limitations Guidelines (See also Part 4.2.3.1)

Table 8.J-3 identifies effluent limits that apply to the industrial activities described below.

Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.J-3		
Industrial Activity	**Parameter**	**Effluent Limitation[1]**
Mine dewatering discharges at crushed stone mining facilities (SIC 1422 - 1429)	pH	6.0 - 9.0
Mine dewatering discharges at construction sand and gravel mining facilities (SIC 1442)	pH	6.0 - 9.0
Mine dewatering discharges at industrial sand mining facilities (SIC 1446)	Total Suspended Solids (TSS)	25 mg/L, monthly avg.
		45 mg/L, daily maximum
	pH	6.0 - 9.0

[1]Monitor annually.

8.J.11 Termination of Permit Coverage

8.J.11.1 ***Termination of Permit Coverage for Sites Reclaimed After December 17, 1990.*** A site or a portion of a site that has been released from applicable state or federal reclamation requirements after December 17, 1990, is no longer required to maintain coverage under this permit. If the site or portion of a site reclaimed after December 17, 1990, was not subject to reclamation requirements, the site or portion of the site is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed as defined in Part 8.J.3.5.

8.J.11.2 ***Termination of Permit Coverage for Sites Reclaimed Before December 17, 1990.*** A site or portion of a site that was released from applicable state or federal reclamation requirements before December 17, 1990, or that was otherwise reclaimed before December 17, 1990, is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed. A site or portion of a site is considered to have been reclaimed if: (1) stormwater that comes into contact with raw materials, intermediate byproducts, finished products, and waste products does not have the potential to cause or contribute to violations of state water quality standards, (2) soil disturbing activities related to mining at the sites or portion of the site have been completed, (3) the site or portion of the site has been stabilized to minimize soil erosion, and (4) as appropriate depending on location, size, and the potential to contribute pollutants to stormwater discharges, the site or portion of the site has been revegetated, will be amenable to natural revegetation, or will be left in a condition consistent with the post-mining land use.

Part 8 – Sector-Specific Requirements for Industrial Activity
Subpart K – Sector K – Hazardous Waste Treatment, Storage, or Disposal Facilities

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.K.1 Covered Stormwater Discharges

The requirements in Subpart K apply to stormwater discharges associated with industrial activity from Hazardous Waste Treatment, Storage, or Disposal facilities (TSDFs) as identified by the Activity Code specified under Sector K in Table D-1 of Appendix D of the permit.

8.K.2 Industrial Activities Covered by Sector K

This permit authorizes stormwater discharges associated with industrial activity from facilities that treat, store, or dispose of hazardous wastes and that are operating under interim status or a permit under subtitle C of RCRA.

Disposal facilities that have been properly closed and capped, and have no significant materials exposed to stormwater, are considered inactive and do not require permits.

8.K.3 Limitations on Coverage

8.K.3.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) The following are not authorized by this permit: leachate, gas collection condensate, drained free liquids, contaminated ground water, laboratory-derived wastewater, and contact wash water from washing truck and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility. (EPA includes these prohibited non- stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.K.3.2 ***Limitations on Coverage for Facilities Providing Commercial TSDF Services.*** For facilities located in Region 6 (see Appendix C) coverage is limited to hazardous waste TSDFs that are self-generating (including occasionally accepting wastes from community household hazardous waste collection events as public service), handle only residential wastes, and/or only store hazardous wastes and do not treat or dispose of them. Coverage under this permit is not available to commercial waste disposal and treatment facilities located in Region 6 that dispose and treat on a commercial basis any produced hazardous wastes (i.e., not their own) as a service to commercial or industrial generators.

8.K.4 Definitions

8.K.4.1 ***Contaminated stormwater*** – stormwater that comes into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in Part 8.K.4.4. Some specific areas of a landfill that may produce contaminated stormwater include (but are not limited to) the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment, or machinery that has been in direct contact with the waste; and waste dumping areas.

8.K.4.2 ***Drained free liquids*** – aqueous wastes drained from waste containers (e.g., drums) prior to landfilling.

8.K.4.3 ***Landfill*** – an area of land or an excavation in which wastes are placed for permanent disposal, but that is not a land application or land treatment unit, surface impoundment, underground injection well, waste pile, salt dome formation, salt bed formation, underground mine, or cave as these terms are defined in 40 CFR 257.2, 258.2, and 260.10.

8.K.4.4 ***Landfill wastewater*** – as defined in 40 CFR Part 445 (Landfills Point Source Category), all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated stormwater, contaminated ground water, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated stormwater, and contact wash water from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

8.K.4.5 ***Leachate*** – liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

8.K.4.6 ***Non-contaminated stormwater*** – stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in Part 8.K.4.4. Non-contaminated stormwater includes stormwater that flows off the cap, cover, intermediate cover, daily cover, and/or final cover of the landfill.

8.K.5 Indicator Monitoring (See also Part 4.2.1)

Table 8.K-1 identifies indicator monitoring that applies to the specific subsectors of Sector K. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.K-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector K (Subsector K1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.K.6 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.K-1 identifies benchmarks that apply to the specific subsectors of Sector K. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.K-1.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector K1. ALL - Industrial Activity Code "HZ" (Note: permit coverage limited in some states). Benchmarks only applicable to discharges not subject to effluent limitations in 40 CFR Part 445 Subpart A (see below).	Ammonia	2.14 mg/L
	Chemical Oxygen Demand (COD)	120 mg/L
	Total Recoverable Arsenic (freshwater) Total Recoverable Arsenic (saltwater)[1]	150 µg/L 69 µg/L
	Total Recoverable Cadmium (freshwater)[2] Total Recoverable Cadmium (saltwater)[1]	Hardness Dependent 33 µg/L
	Total Recoverable Cyanide (freshwater) Total Recoverable Cyanide (saltwater)[1]	22 µg/L 1 µg/L
	Total Recoverable Lead (freshwater)[2] Total Recoverable Lead (saltwater)[1]	Hardness Dependent 210 µg/L
	Total Recoverable Mercury (freshwater) Total Recoverable Mercury (saltwater)[1]	1.4 µg/L 1.8 µg/L
	Total Recoverable Selenium (freshwater) Total Recoverable Selenium (saltwater)[1]	1.5 µg/L for still/standing (lentic) waters; 3.1 µg/L for flowing (lotic) waters 290 µg/L
	Total Recoverable Silver (freshwater)[2] Total Recoverable Silver (saltwater)[1]	Hardness Dependent 1.9 µg/L

[1]Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.
[2]The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	**Cadmium** (µg/L)	**Lead** (µg/L)	**Silver** (µg/L)
0-24.99 mg/L	0.49	14	0.37
25-49.99 mg/L	0.73	24	0.80
50-74.99 mg/L	1.2	45	1.9

75-99.99 mg/L	1.7	69	3.3
100-124.99 mg/L	2.1	95	5.0
125-149.99 mg/L	2.6	123	7.1
150-174.99 mg/L	3.1	152	9.4
175-199.99 mg/L	3.5	182	12
200-224.99 mg/L	4.0	213	15
225-249.99 mg/L	4.4	246	18
250+ mg/L	4.7	262	20

8.K.7 Effluent Limitations Based on Effluent Limitations Guidelines (See also Part4.2.3.1)

Table 8.K-2 identifies effluent limitations that apply to the industrial activities described below. Compliance with these effluent limitations is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.K-2[1]

Industrial Activity	Parameter	Effluent Limitation
Discharges from hazardous waste landfills subject to effluent limitations in 40 CFR Part 445 Subpart A (see footnote).	Biochemical Oxygen Demand (BOD_5)	220 mg/L, daily maximum
		56 mg/L, monthly avg. maximum
	Total Suspended Solids (TSS)	88 mg/L, daily maximum
		27 mg/L, monthly avg. maximum
	Ammonia	10 mg/L, daily maximum
		4.9 mg/L, monthly avg. maximum
	Alpha Terpineol	0.042 mg/L, daily maximum
		0.019 mg/L, monthly avg. maximum
	Aniline	0.024 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Benzoic Acid	0.119 mg/L, daily maximum
		0.073 mg/L, monthly avg. maximum
	Naphthalene	0.059 mg/L, daily maximum
		0.022 mg/L, monthly avg. maximum
	p-Cresol	0.024 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Phenol	0.048 mg/L, daily maximum
		0.029 mg/L, monthly avg. maximum
	Pyridine	0.072 mg/L, daily maximum
		0.025 mg/L, monthly avg. maximum
	Total Arsenic	1.1 mg/L, daily maximum
		0.54 mg/L, monthly avg. maximum
	Total Chromium	1.1 mg/L, daily maximum
		0.46 mg/L, monthly avg. maximum
	Total Zinc	0.535 mg/L, daily maximum
		0.296 mg/L, monthly avg. maximum
	pH	Within the range of 6-9 standard pH units (s.u.)

[1] Monitor annually. As set forth at 40 CFR Part 445 Subpart A, these numeric limitations apply to contaminated stormwater discharges from hazardous waste landfills subject to the provisions of RCRA Subtitle C at 40 CFR Parts 264 (Subpart N) and 265 (Subpart N) except for any of the following facilities:

(a) landfills operated in conjunction with other industrial or commercial operations when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;
(b) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;
(c) landfills operated in conjunction with Centralized Waste Treatment (CWT) facilities subject to 40 CFR Part 437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or
(d) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities, so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart L – Sector L – Landfills, Land Application Sites, and Open Dumps

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.L.1 Covered Stormwater Discharges

The requirements in Subpart L apply to stormwater discharges associated with industrial activity from Landfills and Land Application Sites as identified by the Activity Code specified under Sector L in Table D-1 of Appendix D of the permit.

8.L.2 Industrial Activities Covered by Sector L

This permit may authorize stormwater discharges for Sector L facilities associated with waste disposal at landfills, land application sites that receive or have received industrial waste, including sites subject to regulation under Subtitle D of RCRA. This permit does not cover discharges from landfills that receive only municipal wastes.

8.L.3 Limitations on Coverage

8.L.3.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) The following discharges are not authorized by this permit: leachate, gas collection condensate, drained free liquids, contaminated ground water, laboratory wastewater, and contact wash water from washing truck and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility. (EPA includes these prohibited non- stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.L.3.2 ***Prohibition Stormwater Discharges from Open Dumps.*** Discharges from open dumps as defined under RCRA are also not authorized under this permit.

8.L.4 Definitions

8.L.4.1 ***Contaminated stormwater*** – stormwater that comes into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater. Some areas of a landfill that may produce contaminated stormwater include (but are not limited to) the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment, or machinery that has been in direct contact with the waste; and waste dumping areas.

8.L.4.2 ***Drained free liquids*** – aqueous wastes drained from waste containers (e.g., drums) prior to landfilling.

8.L.4.3 ***Landfill wastewater*** – as defined in 40 CFR Part 445 (Landfills Point Source Category) all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated stormwater, contaminated ground water, and wastewater from recovery pumping wells. Landfill process wastewater includes, but is not limited to, leachate; gas collection condensate; drained free liquids; laboratory- derived wastewater; contaminated stormwater; and contact wash water

from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

8.L.4.4 ***Leachate*** – liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

8.L.4.5 ***Non-contaminated stormwater*** – stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater.

8.L.5 Additional Technology-Based Effluent Limits

8.L.5.1 ***Preventive Maintenance Program***. (See also Part 2.1.2.3) As part of your preventive maintenance program, maintain the following: all elements of leachate collection and treatment systems, to prevent commingling of leachate with stormwater; the integrity and effectiveness of any intermediate or final cover (including repairing the cover as necessary), to minimize the effects of settlement, sinking, and erosion.

8.L.5.2 ***Erosion and Sedimentation Control.*** (See also Part 2.1.2.5) Provide temporary stabilization (e.g., temporary seeding, mulching, and placing geotextiles on the inactive portions of stockpiles) for the following in order to minimize discharges of pollutants in stormwater: materials stockpiled for daily, intermediate, and final cover; inactive areas of the landfill or open dump; landfills or open dump areas that have gotten final covers but where vegetation has yet to establish itself; and land application sites where waste application has been completed but final vegetation has not yet been established.

8.L.6 Additional SWPPP Requirements

8.L.6.1 ***Drainage Area Site Map***. (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: active and closed landfill cells or trenches, active and closed land application areas, locations where open dumping is occurring or has occurred, locations of any known leachate springs or other areas where uncontrolled leachate may commingle with stormwater, and leachate collection and handling systems.

8.L.6.2 ***Summary of Potential Pollutant Sources***. (See also Part 6.2.3) Document in your SWPPP the following sources and activities that have potential pollutants associated with them: fertilizer, herbicide, and pesticide application; earth and soil moving; waste hauling and loading or unloading; outdoor storage of significant materials, including daily, interim, and final cover material stockpiles as well as temporary waste storage areas; exposure of active and inactive landfill and land application areas; uncontrolled leachate flows; and failure or leaks from leachate collection and treatment systems.

8.L.7 Additional Inspection Requirements (See also Part 3)

8.L.7.1 ***Inspections of Active Sites.*** Except in arid and semi-arid climates, inspect operating landfills, open dumps, and land application sites at least once every 7 days. Focus on areas of landfills that have not yet been finally stabilized; active land application areas, areas used for storage of material and wastes that are exposed to precipitation, stabilization, and structural control measures; leachate collection and treatment systems; and locations where equipment and waste trucks enter and exit the site. Ensure that sediment and erosion control measures are operating properly. For stabilized sites and areas where land application has been completed, or where the climate is arid or semi-arid, conduct inspections at least once every month.

8.L.7.2 ***Inspections of Inactive Sites.*** Inspect inactive landfills, open dumps, and land application sites at least quarterly. Qualified personnel must inspect landfill (or open dump) stabilization and structural erosion control measures, leachate collection and treatment systems, and all closed land application areas.

8.L.8 Additional Post-Authorization Documentation Requirements

8.L.8.1 ***Recordkeeping and Internal Reporting***. Keep records with your SWPPP of the types of wastes disposed of in each cell or trench of a landfill or open dump. For land application sites, track the types and quantities of wastes applied in specific areas.

8.L.9 Indicator Monitoring (See also Part 4.2.1)

Table 8.L-1 identifies indicator monitoring that applies to the specific subsectors of Sector L. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.L-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector L (Subsectors L1 and L2) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector L2. All Landfill, Land Application Sites and Open Dumps, except Municipal Solid Waste Landfill (MSWLF) Areas Closed in Accordance with 40 CFR 258.60 (Activity Code LF)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.L.10 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.L-2 identifies benchmarks that apply to the specific subsectors of Sector L. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.L-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration1**
Subsector L1. All Landfill, Land Application Sites and Open Dumps (Industrial Activity Code "LF")	Total Suspended Solids (TSS)	100 mg/L

[1]Benchmark monitoring required only for discharges not subject to effluent limitations in 40 CFR Part 445 Subpart B (see Table L-3 below).

8.L.11 Effluent Limitations Based on Effluent Limitations Guidelines (See also Part 4.2.3.1)

Table 8.L-3 identifies effluent limitations that apply to the industrial activities described below. Compliance with these effluent limitations is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.L-3[1]		
Industrial Activity	**Parameter**	**Effluent Limitation**
Discharges from non-hazardous waste landfills subject to effluent limitations in 40 CFR Part 445 Subpart B.	Biochemical Oxygen Demand (BOD_5)	140 mg/L, daily maximum
		37 mg/L, monthly avg. maximum
	Total Suspended Solids (TSS)	88 mg/L, daily maximum
		27 mg/L, monthly avg. maximum
	Ammonia	10 mg/L, daily maximum
		4.9 mg/L, monthly avg. maximum
	Alpha Terpineol	0.033 mg/L, daily maximum
		0.016 mg/L monthly avg. maximum
	Benzoic Acid	0.12 mg/L, daily maximum
		0.071 mg/L, monthly avg. maximum
	p-Cresol	0.025 mg/L, daily maximum
		0.014 mg/L, monthly avg. maximum
	Phenol	0.026 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Total Zinc	0.20 mg/L, daily maximum
		0.11 mg/L, monthly avg. maximum
	pH	Within the range of 6-9 standard pH units (s.u.)

[1] Monitor annually. As set forth at 40 CFR Part 445 Subpart B, these numeric limitations apply to contaminated stormwater discharges from MSWLFs that have not been closed in accordance with 40 CFR 258.60, and to contaminated stormwater discharges from those landfills that are subject to the provisions of 40 CFR Part 257 except for discharges from any of the following facilities:

(a) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;
(b) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation, or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;
(c) landfills operated in conjunction with CWT facilities subject to 40 CFR Part 437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly

associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or

(d) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities, so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart M – Sector M – Automobile Salvage Yards

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.M.1 Covered Stormwater Discharges

The requirements in Subpart M apply to stormwater discharges associated with industrial activity from Automobile Salvage Yards as identified by the SIC Code specified under Sector M in Table D-1 of Appendix D of this permit.

8.M.2 Additional Technology-Based Effluent Limits

8.M.2.1 ***Spill and Leak Prevention Procedures.*** (See also Part 2.1.2.4) Drain vehicles intended to be dismantled of all fluids upon arrival at the site (or as soon thereafter as practicable), or employ some other equivalent means to prevent spills and leaks.

8.M.2.2 ***Employee Training.*** (See also Part 2.1.2.8) If applicable to your facility, address the following areas (at a minimum) in your employee training program: proper handling (collection, storage, and disposal) of oil, used mineral spirits, anti-freeze, mercury switches, and solvents.

8.M.2.3 ***Management of Stormwater.*** (See also Part 2.1.2.6) Implement control measures to minimize discharges of pollutants in stormwater such as the following, where determined to be feasible (list not exclusive): berms or drainage ditches on the property line (to help prevent run-on from neighboring properties); berms for uncovered outdoor storage of oily parts, engine blocks, and above-ground liquid storage; installation of detention ponds; and installation of filtering devices and oil and water separators.

8.M.3 Additional SWPPP Requirements

8.M.3.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Identify locations used for dismantling, storing, and maintaining used motor vehicle parts. Also identify where any of the following may be exposed to precipitation or stormwater: dismantling areas, parts (e.g., engine blocks, tires, hub caps, batteries, hoods, mufflers) storage areas, and liquid storage tanks and drums for fuel and other fluids.

8.M.3.2 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Assess the potential for the following to contribute pollutants to stormwater discharges: vehicle storage areas, dismantling areas, parts storage areas (e.g., engine blocks, tires, hub caps, batteries, hoods, mufflers), and fueling stations.

8.M.4 Additional Inspection Requirements (See also Part 3.1)

Immediately (or as soon thereafter as practicable) inspect vehicles arriving at the site for leaks. Inspect quarterly for signs of leakage all equipment containing oily parts, hydraulic fluids, any other types of fluids, or mercury switches. Also, inspect quarterly for signs of leakage all vessels and areas where hazardous materials and general automotive fluids are stored, including, but not limited to, mercury switches, brake fluid, transmission fluid, radiator water, and antifreeze.

8.M.5 Indicator Monitoring (See also Part 4.2.1)

Table 8.M-1 identifies indicator monitoring that applies to the specific subsectors of Sector M. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.M-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector M (Subsector M1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector M1. Automobile Salvage Yards (SIC Code 5015)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.M.6 Sector-Specific Benchmarks (See also Part 4.2.3)

Table 8.M-2 identifies benchmarks that apply to Sector M. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.M-2.

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Subsector M1. Automobile Salvage Yards (SIC 5015)	Total Suspended Solids (TSS)	100 mg/L
	Total Recoverable Aluminum	1,100 µg/L
	Total Recoverable Lead (freshwater)[2] Total Recoverable Lead (saltwater)[1]	Hardness Dependent 210 µg/L

[1]Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.

[2]The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	**Lead** (µg/L)
0-24.99 mg/L	14
25-49.99 mg/L	24
50-74.99 mg/L	45
75-99.99 mg/L	69
100-124.99 mg/L	95
125-149.99 mg/L	123
150-174.99 mg/L	152
175-199.99 mg/L	182
200-224.99 mg/L	213
225-249.99 mg/L	246
250+ mg/L	262

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart N – Sector N – Scrap Recycling and Waste Recycling Facilities

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.N.1 Covered Stormwater Discharges

The requirements in Subpart N apply to stormwater discharges associated with industrial activity from Scrap Recycling and Waste Recycling facilities as identified by the SIC Code specified under Sector N in Table D-1 of Appendix D of the permit.

8.N.2 Limitation on Coverage

Separate permit requirements have been established for recycling facilities that receive, process, and do wholesale distribution of only source-separated recyclable materials primarily from non-industrial and residential sources (i.e., common consumer products including paper, newspaper, glass, cardboard, plastic containers, and aluminum and tin cans). This includes recycling facilities commonly referred to as material recovery facilities (MRF). See Part 8.N.3.3.

8.N.2.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) Non-stormwater discharges from turnings containment areas are not covered by this permit (see also Part 8.N.3.1.3). Discharges from containment areas in the absence of a storm event are prohibited unless covered by a separate NPDES permit. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.N.3 Additional Technology-Based Effluent Limits

8.N.3.1 ***Scrap and Waste Recycling Facilities (Non-Source Separated, Nonliquid Recyclable Materials).*** The following requirements are for facilities that receive, process, and do wholesale distribution of non-source separated, nonliquid recyclable wastes (e.g., ferrous and nonferrous metals, plastics, glass, cardboard, and paper). These facilities may receive both nonrecyclable and recyclable materials. This section is not intended for those facilities that accept recyclables only from primarily non-industrial and residential sources.

8.N.3.1.1 ***Inbound Recyclable and Waste Material Control Program.*** Minimize the chance of accepting materials that could be significant sources of pollutants by conducting inspections of inbound recyclables and waste materials and through implementation of control measures such as the following, where determined to be feasible (list not exclusive): providing information and education to suppliers of scrap and recyclable waste materials on draining and properly disposing of residual fluids (e.g., from vehicles and equipment engines, radiators and transmissions, oil filled transformers, and individual containers or drums) and removal of mercury switches from vehicles before delivery to your facility; establishing procedures to minimize the potential of any residual fluids from coming into contact with precipitation or stormwater; establishing procedures for accepting scrap lead-acid batteries (additional requirements for the

handling, storage, and disposal or recycling of batteries are contained in the scrap lead-acid battery program provisions in Part 8.N.3.1.6); providing training targeted for those personnel engaged in the inspection and acceptance of inbound recyclable materials; and establishing procedures to ensure that liquid wastes, including used oil, are stored in materially compatible and non-leaking containers and are disposed of or recycled in accordance with the Resource Conservation and Recovery Act (RCRA).

8.N.3.1.2 ***Scrap and Waste Material Stockpiles and Storage (Outdoor).*** Minimize contact of stormwater with stockpiled materials, processed materials, and nonrecyclable wastes through implementation of control measures such as the following, where determined to be feasible (list not exclusive): permanent or semi-permanent covers; sediment traps, vegetated swales and strips, catch basin filters, and sand filters to facilitate settling or filtering of pollutants; dikes, berms, containment trenches, culverts, and surface grading to divert stormwater from storage areas; silt fencing; and oil and water separators, sumps, and dry absorbents for areas where potential sources of residual fluids are stockpiled (e.g., automobile engine storage areas).

8.N.3.1.3 ***Stockpiling of Turnings Exposed to Cutting Fluids (Outdoor Storage).*** Minimize contact of stormwater with residual cutting fluids by storing all turnings exposed to cutting fluids under some form of permanent or semi-permanent cover, or establishing dedicated containment areas for all turnings that have been exposed to cutting fluids. Any containment areas must be constructed of concrete, asphalt, or other equivalent types of impermeable material and include a barrier (e.g., berms, curbing, elevated pads) to prevent contact with stormwater run-on. Stormwater from these areas can be discharged, provided that any stormwater is first collected and treated by an oil and water separator or its equivalent. You must regularly maintain the oil and water separator (or its equivalent) and properly dispose of or recycle collected residual fluids.

8.N.3.1.4 ***Scrap and Waste Material Stockpiles and Storage (Covered or Indoor Storage).*** Minimize contact of residual liquids and particulate matter from materials stored indoors or under cover with stormwater through implementation of control measures such as the following, where determined to be feasible (list not exclusive): good housekeeping measures, including the use of dry absorbents or wet vacuuming to contain, dispose of, or recycle residual liquids originating from recyclable containers, and mercury spill kits for spills from storage of mercury switches; not allowing wash water from tipping floors or other processing areas to discharge to the storm sewer system; and disconnecting or sealing off all floor drains connected to the storm sewer system.

8.N.3.1.5 ***Scrap and Recyclable Waste Processing Areas***. Minimize stormwater from coming in contact with scrap processing equipment. Pay attention to operations that generate visible amounts of particulate residue (e.g., shredding) to minimize the contact of accumulated particulate matter and residual fluids with stormwater (i.e., through good housekeeping, preventive maintenance). To minimize discharges of pollutants in stormwater from scrap and recyclable waste processing areas, implement control measures such as the following, where determined to be feasible (list not exclusive): at least once per month inspecting equipment for spills

or leaks and malfunctioning, worn, or corroded parts or equipment; establishing a preventive maintenance program for processing equipment; using dry-absorbents or other cleanup practices to collect and dispose of or recycle spilled or leaking fluids or use mercury spill kits for spills from storage of mercury switches; on unattended hydraulic reservoirs over 150 gallons in capacity, installing protection devices such as low-level alarms or equivalent devices, or secondary containment that can hold the entire volume of the reservoir; implementing containment or diversion structures such as dikes, berms, culverts, trenches, elevated concrete pads, and grading to minimize contact of stormwater with outdoor processing equipment or stored materials; using oil and water separators or sumps; installing permanent or semi-permanent covers in processing areas where there are residual fluids and grease; and using retention or detention ponds or basins, sediment traps, vegetated swales or strips, and/or catch basin filters or sand filters for pollutant settling and filtration.

8.N.3.1.6 ***Scrap Lead-Acid Battery Program.*** To minimize the discharge of pollutants in stormwater from lead-acid batteries, properly handle, store, and dispose of scrap lead-acid batteries, and implement control measures such as the following, where determined to be feasible (list not exclusive): segregating scrap lead-acid batteries from other scrap materials; properly handling, storing, and disposing of cracked or broken batteries; collecting and disposing of leaking lead-acid battery fluid; minimizing or eliminating (if possible) exposure of scrap lead-acid batteries to precipitation or stormwater; and providing employee training for the management of scrap batteries.

8.N.3.1.7 ***Spill Prevention and Response Procedures.*** (See also Part 2.1.2.4) Install alarms and/or pump shutoff systems on outdoor equipment with hydraulic reservoirs exceeding 150 gallons in the event of a line break. Alternatively, a secondary containment system capable of holding the entire contents of the reservoir plus room for precipitation can be used. Use a mercury spill kit for any release of mercury from switches, anti-lock brake systems, and switch storage areas.

8.N.3.1.8 ***Supplier Notification Program.*** As appropriate, notify major suppliers which scrap materials will not be accepted at the facility or will be accepted only under certain conditions.

8.N.3.2 *Waste Recycling Facilities (Liquid Recyclable Materials)*

8.N.3.2.1 ***Waste Material Storage (Indoor).*** Minimize or eliminate contact between residual liquids from waste materials stored indoors and from stormwater . The plan may refer to applicable portions of other existing plans, such as Spill Prevention, Control, and Countermeasure (SPCC) plans required under 40 CFR Part 112. To minimize discharges of pollutants in stormwater from indoor waste material storage areas, implement control measures such as the following, where determined to be feasible (list not exclusive): implementing procedures for material handling (including labeling and marking); cleaning up spills and leaks with dry absorbent materials and/or a wet vacuum system; installing appropriate containment structures (e.g., trenching, curbing, gutters, etc.); and installing a drainage system, including appurtenances (e.g., pumps or ejectors, manually operated valves), to handle discharges from diked or bermed areas. Drainage

should be discharged to an appropriate treatment facility or sanitary sewer system, or otherwise disposed of properly. These discharges may require coverage under a separate NPDES wastewater permit or industrial user permit under the pretreatment program.

8.N.3.2.2 ***Waste Material Storage (Outdoor).*** Minimize contact between stored residual liquids and precipitation or stormwater. The plan may refer to applicable portions of other existing plans, such as SPCC plans required under 40 CFR Part 112.

Discharges of stormwater from containment areas containing used oil must also be in accordance with applicable sections of 40 CFR Part 112. To minimize discharges of pollutants in stormwater from outdoor waste material storage areas, implement control measures such as the following, where determined to be feasible (list not exclusive): appropriate containment structures (e.g., dikes, berms, curbing, pits) to store the volume of the largest tank, with sufficient extra capacity for precipitation; drainage control and other diversionary structures; corrosion protection and/or leak detection systems for storage tanks; and dry-absorbent materials or a wet vacuum system to collect spills.

8.N.3.2.3 ***Trucks and Rail Car Waste Transfer Areas.*** Minimize pollutants in stormwater discharges from truck and rail car loading and unloading areas. Include measures to clean up minor spills and leaks resulting from the transfer of liquid wastes. To minimize discharges of pollutants in stormwater from truck and rail car waste transfer areas, implement control measures such as the following, where determined to be feasible (list not exclusive): containment and diversionary structures to minimize contact with precipitation or stormwater; and dry clean-up methods, wet vacuuming, roof coverings, and/or stormwater controls.

8.N.3.3 ***Recycling Facilities (Source-Separated Materials).*** The following requirements are for facilities that receive only source-separated recyclables, primarily from non-industrial and residential sources.

8.N.3.3.1 ***Inbound Recyclable Material Control.*** Minimize the chance of accepting nonrecyclables (e.g., hazardous materials) that could be a significant source of pollutants by conducting inspections of inbound materials and through the implementation of control measures such as the following, where determined to be feasible (list not exclusive): providing information and education measures to inform suppliers of recyclables about acceptable and non- acceptable materials; training drivers responsible for pickup of recycled material; clearly marking public drop-off containers regarding which materials can be accepted; rejecting nonrecyclable wastes or household hazardous wastes at the source; and establishing procedures for handling and disposal of nonrecyclable material.

8.N.3.3.2 ***Outdoor Storage.*** Minimize exposure of recyclables to precipitation and stormwater by using good housekeeping measures to prevent accumulation of particulate matter and fluids, particularly in high traffic areas and through implementation of control measure such as the following, where determined to be feasible (list not exclusive): providing totally enclosed drop-off containers for the public; installing a sump and pump with each container pit and treat or discharge collected fluids to a sanitary sewer system; providing dikes and curbs for secondary

containment (e.g., around bales of recyclable waste paper); diverting stormwater away from outside material storage areas; providing covers over containment bins, dumpsters, and roll-off boxes; and storing the equivalent of one day's volume of recyclable material indoors.

8.N.3.3.3 ***Indoor Storage and Material Processing.*** Minimize the release of pollutants from indoor storage and processing areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): scheduling routine good housekeeping measures for all storage and processing areas; prohibiting tipping floor wash water from draining to the storm sewer system; and providing employee training on pollution prevention practices.

8.N.3.3.4 ***Vehicle and Equipment Maintenance.*** Minimize the discharge of pollutants in stormwater from areas where vehicle and equipment maintenance occur outdoors through implementation of control measures such as the following, where determined to be feasible (list not exclusive): minimizing or eliminating outdoor maintenance areas; establishing spill prevention and clean-up procedures in fueling areas; avoiding topping off fuel tanks; diverting stormwater from fueling areas; storing lubricants and hydraulic fluids indoors; and providing employee training on proper handling and storage of hydraulic fluids and lubricants.

8.N.4 **Additional SWPPP Requirements**

8.N.4.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in your SWPPP the locations of any of the following activities or sources that may be exposed to precipitation or stormwater: scrap and waste material storage; outdoor scrap and waste processing equipment; and containment areas for turnings exposed to cutting fluids.

8.N.4.2 ***Maintenance Schedules/Procedures for Collection, Handling, and Disposal or Recycling of Residual Fluids at Scrap and Waste Recycling Facilities.*** If you are subject to Part 8.N.3.1.3, your SWPPP must identify any applicable maintenance schedule and the procedures to collect, handle, and dispose of or recycle residual fluids.

8.N.5 **Additional Inspection Requirements**

8.N.5.1 ***Inspections for Waste Recycling Facilities.*** The inspections must be performed quarterly, per Part 3.1, and include, at a minimum, all areas where waste is generated, received, stored, treated, or disposed of and that are exposed to either precipitation or stormwater.

8.N.6 **Indicator Monitoring (See also Part 4.2.1)**

Table 8.N-1 identifies indicator monitoring that applies to the specific subsectors of Sector N. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.N-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Applies to all Sector N (Subsectors N1 and N2) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector N2. Source-separated Recycling Facility (SIC Code 5093)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

8.N.7 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.N-2 identifies benchmarks that apply to Sector N. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.N-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector N1. Scrap Recycling and Waste Recycling Facilities except those only receiving source-separate recyclable materials primarily from non-industrial and residential sources (SIC 5093)	Chemical Oxygen Demand (COD)	120 mg/L
	Total Suspended Solids (TSS)	100 mg/L
	Total Recoverable Aluminum	1,100 µg/L
	Total Recoverable Copper (freshwater)[2] Total Recoverable Copper (saltwater)[1]	5.19 µg/L 4.8 µg/L
	Total Recoverable Lead (freshwater)[2] Total Recoverable Lead (saltwater)[1]	Hardness Dependent 210 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L

[1]Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.
[2]The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	Lead	Zinc
0-24.99 mg/L	14	37
25-49.99 mg/L	24	52
50-74.99 mg/L	45	80
75-99.99 mg/L	69	107
100-124.99 mg/L	95	132
125-149.99 mg/L	123	157
150-174.99 mg/L	152	181
175-199.99 mg/L	182	204
200-224.99 mg/L	213	227
225-249.99 mg/L	246	249
250+ mg/L	262	260

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart O – Sector O – Steam Electric Generating Facilities

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.O.1 Covered Stormwater Discharges

The requirements in Subpart O apply to stormwater discharges associated with industrial activity from Steam Electric Power Generating Facilities as identified by the Activity Code specified under Sector O in Table D-1 of Appendix D.

8.O.2 Industrial Activities Covered by Sector O

This permit authorizes stormwater discharges from the following industrial activities at Sector O facilities:

8.O.2.1 ***Steam electric power generation using coal, natural gas, oil, nuclear energy, etc., to produce a steam source, including coal handling areas (does not include geothermal power);***

8.O.2.2 ***Coal pile runoff, including effluent limitations established by 40 CFR Part 423;***

8.O.2.3 ***Dual fuel facilities that could employ a steam boiler.***

8.O.3 Limitations on Coverage

8.O.3.1 ***Prohibition of Non-Stormwater Discharges.*** Non-stormwater discharges subject to effluent limitations guidelines are not covered by this permit. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.O.3.2 ***Prohibition of Stormwater Discharges.*** Stormwater discharges from the following are not covered by this permit:

8.O.3.2.1 ***Ancillary facilities (e.g., fleet centers and substations) that are not contiguous to a steam electric power generating facility;***

8.O.3.2.2 ***Gas turbine facilities (provided the facility is not a dual-fuel facility that includes a steam boiler), and combined-cycle facilities where no supplemental fuel oil is burned (and the facility is not a dual-fuel facility that includes a steam boiler);***

8.O.3.2.3 ***Cogeneration (combined heat and power) facilities utilizing a gas turbine.***

8.O.4 **Additional Technology-Based Effluent Limits.** The following good housekeeping measures are required in addition to Part 2.1.2.2:

8.O.4.1 ***Fugitive Dust Emissions.*** Minimize fugitive dust emissions from coal handling areas to minimize the tracking of coal dust offsite that could be discharged in stormwater through implementation of control measures such as the following, where determined to be feasible, (list not exclusive): installing specially designed tires; and

washing vehicles in a designated area before they leave the site and controlling the wash water.

8.O.4.2 ***Delivery Vehicles.*** Minimize contamination of stormwater from delivery vehicles arriving at the plant site. Implement procedures to inspect delivery vehicles arriving at the plant site as necessary to minimize discharges of pollutants in stormwater. Ensure the overall integrity of the body or container of the delivery vehicle and implement procedures to deal with leakage or spillage from delivery vehicles.

8.O.4.3 ***Fuel Oil Unloading Areas.*** Minimize contamination of precipitation or stormwater from fuel oil unloading areas. Use containment curbs in unloading areas where feasible. In addition, ensure personnel familiar with spill prevention and response procedures are available to respond expeditiously in the event of a leak or spill during deliveries. Ensure that any leaks or spills are immediately contained and cleaned up, and use spill and overflow protection devices (e.g., drip pans, drip diapers, or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors).

8.O.4.4 ***Chemical Loading and Unloading.*** Minimize contamination of precipitation or stormwater from chemical loading and unloading areas. Use containment curbs at chemical loading and unloading areas to contain spills, where practicable. In addition, ensure personnel familiar with spill prevention and response procedures are available to respond expeditiously in the event of a leak or spill during deliveries. Ensure leaks and spills are immediately contained and cleaned up and, where practicable, load and unload in covered areas and store chemicals indoors.

8.O.4.5 ***Miscellaneous Loading and Unloading Areas.*** Minimize contamination of precipitation or stormwater from loading and unloading areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering the loading area; grading, curbing, or berming around the loading area to divert run-on; locating the loading and unloading equipment and vehicles so that leaks are contained in existing containment and flow diversion systems; or equivalent procedures.

8.O.4.6 ***Liquid Storage Tanks.*** Minimize contamination of stormwater from above-ground liquid storage tanks through implementation of control measures such as the following, where determined to be feasible, the following (list not exclusive): using protective guards around tanks; using containment curbs; installing spill and overflow protection; using dry cleanup methods; or equivalent measures.

8.O.4.7 ***Large Bulk Fuel Storage Tanks.*** Minimize contamination of stormwater from large bulk fuel storage tanks. Use containment berms (or their equivalent). You must also comply with applicable state and federal laws, including Spill Prevention, Control and Countermeasure (SPCC) Plan requirements.

8.O.4.8 ***Spill Reduction Measures***. Minimize the potential for an oil or chemical spill, or reference the appropriate part of your SPCC plan. Visually inspect as part of your routine facility inspection the structural integrity of all above-ground tanks, pipelines, pumps, and related equipment that may be exposed to stormwater, and make any necessary repairs immediately.

8.O.4.9 ***Oil-Bearing Equipment in Switchyards.*** Minimize contamination of stormwater from oil-bearing equipment in switchyard areas. Use level grades and gravel surfaces to retard flows and limit the spread of spills, or collect stormwater in perimeter ditches.

8.O.4.10 ***Residue-Hauling Vehicles.*** Inspect all residue-hauling vehicles for proper covering over the load, adequate gate sealing, and overall integrity of the container body. Repair vehicles without load covering or adequate gate sealing, or with leaking containers or beds.

8.O.4.11 ***Ash Loading Areas.*** Reduce or control the tracking of ash and residue from ash loading areas. Clear the ash building floor and immediately adjacent roadways of spillage, debris, and excess water as necessary to minimize discharges of pollutants in stormwater.

8.O.4.12 ***Areas Adjacent to Disposal Ponds or Landfills***. Minimize contamination of stormwater from areas adjacent to disposal ponds or landfills. Reduce ash residue that may be tracked on to access roads traveled by residue handling vehicles, and reduce ash residue on exit roads leading into and out of residue handling areas.

8.O.4.13 ***Landfills, Scrap Yards, Surface Impoundments, Open Dumps, General Refuse Sites.*** Minimize the potential for contamination of stormwater from these areas.

8.O.5 Additional SWPPP Requirements

8.O.5.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in your SWPPP the locations of any of the following activities or sources that may be exposed to precipitation or stormwater: storage tanks, scrap yards, and general refuse areas; short- and long-term storage of general materials (including but not limited to supplies, construction materials, paint equipment, oils, fuels, used and unused solvents, cleaning materials, paint, water treatment chemicals, fertilizer, and pesticides); landfills and construction sites; and stock pile areas (e.g., coal or limestone piles).

8.O.5.2 ***Documentation of Good Housekeeping Measures***. You must document in your SWPPP the good housekeeping measures implemented to meet the effluent limits in Part 8.O.4.

8.O.6 Additional Inspection Requirements

As part of your inspection, inspect the following areas monthly: coal handling areas, loading or unloading areas, switchyards, fueling areas, bulk storage areas, ash handling areas, areas adjacent to disposal ponds and landfills, maintenance areas, liquid storage tanks, and long term and short term material storage areas.

8.O.7 Indicator Monitoring (See also Part 4.2.1)

Table 8.O-1 identifies indicator monitoring that applies to the specific subsectors of Sector O. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.O-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Applies to all Sector O (Subsector O1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector O1. Steam Electric Generating Facilities, including coal handling sites (SIC Code SE)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values
	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.O.8 Effluent Limitations Based on Effluent Limitations Guidelines (See also Part4.2.3.1)

Table 8.O-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other waste streams that may be covered under this permit.

Table 8.O-2[1]		
Industrial Activity	**Parameter**	**Effluent Limitation**
Discharges from coal storage piles at Steam Electric Generating Facilities	TSS	50 mg/l[2]
	pH	6.0 min - 9.0 max

[1] Monitor annually.

[2] If your facility is designed, constructed, and operated to treat the volume of coal pile runoff that is associated with a 10-year, 24-hour rainfall event, any untreated overflow of coal pile runoff from the treatment unit is not subject to the 50 mg/L limitation for total suspended solids.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart P – Sector P – Land Transportation and Warehousing

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.P.1 Covered Stormwater Discharges

The requirements in Subpart P apply to stormwater discharges associated with industrial activity from Land Transportation and Warehousing facilities as identified by the SIC Codes specified under Sector P in Table D-1 of Appendix D of the permit.

8.P.2 Limitation on Coverage

8.P.2.1 ***Prohibited Discharges*** (see also Parts 1.1.3 and 8.P.3.1.4) This permit does not authorize the discharge of vehicle/equipment/surface wash water, including tank cleaning operations. Such discharges must be authorized under a separate NPDES permit, discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements, or recycled on-site.

8.P.3 Additional Technology-Based Effluent Limits

8.P.3.1 ***Good Housekeeping Measures.*** (See also Part 2.1.2.2) In addition to the Good Housekeeping requirements in Part 2.1.2.2, you must do the following.

8.P.3.1.1 ***Vehicle and Equipment Storage Areas***. Minimize the potential for stormwater exposure to leaky or leak-prone vehicles/equipment awaiting maintenance through implementation of control measures such as the following, where determined to be feasible (list not exclusive): using of drip pans under vehicles/equipment; storing vehicles and equipment indoors; installing berms or dikes; using of absorbents; roofing or covering storage areas; and cleaning pavement surfaces to remove oil and grease.

8.P.3.1.2 ***Fueling Areas.*** Minimize contamination of stormwater from fueling areas through implementation of control measures such as the following, where determined to be feasible: covering the fueling area; using spill/overflow protection and cleanup equipment; minimizing stormwater run-on/discharges to the fueling area; using dry cleanup methods; and treating and/or recycling collected stormwater.

8.P.3.1.3 ***Material Storage Areas***. Maintain all material storage vessels (e.g., for used oil/oil filters, spent solvents, paint wastes, hydraulic fluids) to prevent contamination of stormwater and plainly label them (e.g., "Used Oil," "Spent Solvents"). To minimize discharges of pollutants in stormwater from material storage areas, implement control measures such as the following, where determined to be feasible (list not exclusive): storing the materials indoors; installing berms/dikes around the areas; minimizing discharges of stormwater to the areas; using dry cleanup methods; and treating and/or recycling collected stormwater.

8.P.3.1.4 ***Vehicle and Equipment Cleaning Areas.*** Minimize contamination of stormwater from all areas used for vehicle/equipment cleaning through

implementation of control measures such as the following, where determined to be feasible (list not exclusive): performing all cleaning operations indoors; covering the cleaning operation, ensuring that all wash water drains to a proper collection system (i.e., not the stormwater drainage system); treating and/or recycling collected wash water; or other equivalent measures.

Discharges of vehicle and equipment wash water, including tank cleaning operations, are not authorized by this permit for this sector.

8.P.3.1.5 ***Vehicle and Equipment Maintenance Areas.*** Minimize contamination of stormwater from all areas used for vehicle/equipment maintenance through implementation of control measures such as the following, where determined to be feasible (list not exclusive): performing maintenance activities indoors; using drip pans; keeping an organized inventory of materials used in the shop; draining all parts of fluid prior to disposal; prohibiting wet clean up practices if these practices would result in the discharge of pollutants to stormwater drainage systems; using dry cleanup methods; treating and/or recycling collected stormwater; and minimizing run on/discharges of stormwater to maintenance areas.

8.P.3.1.6 ***Locomotive Sanding (Loading Sand for Traction)*** Areas. Minimize discharges of pollutants in stormwater from locomotive sanding areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering sanding areas; minimizing stormwater run on/discharges; or appropriate sediment removal practices to minimize the offsite transport of sanding material by stormwater.

8.P.3.2 ***Employee Training.*** (See also Part 2.1.2.8) Train personnel at least once a year and address the following activities, as applicable: used oil and spent solvent management; fueling procedures; general good housekeeping practices; proper painting procedures; and used battery management.

8.P.4 **Additional SWPPP Requirements**

8.P.4.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Identify in the SWPPP the following areas of the facility and indicate whether activities occurring there may be exposed to precipitation/stormwater: fueling stations; vehicle/equipment maintenance or cleaning areas; storage areas for vehicle/equipment with actual or potential fluid leaks; loading/unloading areas; areas where treatment, storage or disposal of wastes occur; liquid storage tanks; processing areas; and storage areas.

8.P.4.2 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Assess the potential for the following activities and facility areas to contribute pollutants to stormwater discharges: onsite waste storage or disposal; dirt/gravel parking areas for vehicles awaiting maintenance; illicit plumbing connections between shop floor drains and the stormwater conveyance system(s); and fueling areas. Describe these activities in the SWPPP.

8.P.4.2.1 ***Description of Good Housekeeping Measures.*** You must document in your SWPPP the good housekeeping measures you implement consistent with Part 8.P.3.

8.P.4.2.2 ***Vehicle and Equipment Wash Water Requirements.*** If wash water is handled in a manner that does not involve separate NPDES permitting

(e.g., hauled offsite), describe the disposal method and include all pertinent information (e.g., frequency, volume, destination, etc.) in your SWPPP. Discharges of vehicle and equipment wash water, including tank cleaning operations, are not authorized by this permit for this sector.

8.P.5 Additional Inspection Requirements (See also Part 3.1)

Inspect all the following areas/activities: storage areas for vehicles/equipment awaiting maintenance, fueling areas, indoor and outdoor vehicle/equipment maintenance areas, material storage areas, vehicle/equipment cleaning areas and loading/unloading areas.

8.P.6 Indicator Monitoring (See also Part 4.2.1)

Table 8.P-1 identifies indicator monitoring that applies to the specific subsectors of Sector P. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.P-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector P (Subsector P1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector P1. Railroad Transportation (SIC Code 4011, 4013); Local and Highway Passenger Transportation (SIC Code 4111-4173); Motor Freight Transportation and Warehousing (SIC Code 4212-4231); United States Postal Service (SIC Code 4311); Petroleum Bulk Stations and Terminals (SIC Code 5171)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values
Subsector P1. Railroad Transportation (SIC Code 4011, 4013); Petroleum Bulk Stations and Terminals (SIC Code 5171)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart Q – Sector Q – Water Transportation

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.Q.1 Covered Stormwater Discharges

The requirements in Subpart Q apply to stormwater discharges associated with industrial activity from Water Transportation facilities as identified by the SIC Codes specified under Sector Q in Table D-1 of Appendix D of the permit.

8.Q.2 Limitations on Coverage

8.Q.2.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) The following are not authorized by this permit: discharges from vessels including bilge and ballast water, sanitary wastes, pressure wash water, and cooling water. Any discharge of pollutants from a point source to a water of the U.S. requires coverage under an NPDES permit. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.Q.3 Additional Technology-Based Effluent Limits

8.Q.3.1 ***Good Housekeeping Measures.*** You must implement the following good housekeeping measures in addition to the requirements of Part 2.1.2.2:

8.Q.3.1.1 ***Pressure Washing Area***. If pressure washing is used to remove marine growth from vessels, the discharge water must be permitted by a separate NPDES permit. Collect or contain the discharges from the pressure washing area so that they are not commingled with stormwater discharges authorized by this permit.

8.Q.3.1.2 ***Blasting and Painting Area***. Minimize the potential for spent abrasives, paint chips, and overspray to be discharged into receiving waters or the storm sewer system. Contain all blasting and painting activities, or use other measures, to minimize the discharge of contaminants (e.g., hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris). At least once per month, you must clean stormwater conveyances of deposits of abrasive blasting debris and paint chips.

8.Q.3.1.3 ***Material Storage Areas.*** Store and plainly label all containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) in a protected, secure location away from drains. Minimize the contamination of precipitation or stormwater from the storage areas. Specify which materials are stored indoors, and contain or enclose or use other measures for those stored outdoors. If abrasive blasting is performed, discuss the storage and disposal of spent abrasive materials generated at the facility. Implement an inventory control plan to limit the presence of potentially hazardous materials onsite.

8.Q.3.1.4 ***Engine Maintenance and Repair Areas.*** Minimize the contamination of precipitation or stormwater from all areas used for engine maintenance and repair through implementation of control measures such as the following, where determined to be feasible (list not exclusive): performing all maintenance activities indoors; maintaining an organized inventory of materials used in the shop; draining all parts of fluid prior to disposal; prohibiting the practice of hosing down the shop floor; using dry cleanup methods; and treating and/or recycling stormwater collected from the maintenance area.

8.Q.3.1.5 ***Material Handling Area.*** Minimize the contamination of precipitation or stormwater from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels) through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering fueling areas; using spill and overflow protection; mixing paints and solvents in a designated area (preferably indoors or under a shed); and minimizing discharges of stormwater to material handling areas.

8.Q.3.1.6 ***Drydock Activities.*** Routinely maintain and clean the drydock to minimize discharges of pollutants in stormwater. Address the cleaning of accessible areas of the drydock prior to flooding, and final cleanup following removal of the vessel and raising the dock. Include procedures for cleaning up oil, grease, and fuel spills occurring on the drydock. To minimize discharges of pollutants in stormwater from drydock activities, implement control measures such as the following, where determined to be feasible (list not exclusive): sweeping rather than hosing off debris and spent blasting material from accessible areas of the drydock prior to flooding; and making absorbent materials and oil containment booms readily available to clean up or contain any spills.

8.Q.3.2 ***Employee Training.*** (See also Part 2.1.2.8) As part of your employee training program, address, at a minimum, the following activities (as applicable): used oil management; spent solvent management; disposal of spent abrasives; disposal of vessel wastewaters; spill prevention and control; fueling procedures; general good housekeeping practices; painting and blasting procedures; and used battery management.

8.Q.3.3 ***Preventive Maintenance***. (See also Part 2.1.2.3) As part of your preventive maintenance program, perform timely inspection and maintenance of stormwater management devices (e.g., cleaning oil and water separators and sediment traps to ensure that spent abrasives, paint chips, and solids will be intercepted and retained prior to entering the storm drainage system), as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters.

8.Q.4 **Additional SWPPP Requirements**

8.Q.4.1 ***Drainage Area Site Map***. (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: fueling; engine maintenance and repair; vessel maintenance and repair; pressure washing; painting; sanding; blasting; welding; metal fabrication; loading and unloading areas; locations used for the treatment, storage, or disposal of wastes; liquid storage tanks; liquid storage areas (e.g., paint, solvents, resins); and material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

8.Q.4.2 ***Summary of Potential Pollutant Sources.*** (See also Part 6.2.3) Document in the SWPPP the following additional sources and activities that have potential pollutants associated with them: outdoor manufacturing or processing activities (e.g., welding, metal fabricating) and significant dust or particulate generating processes (e.g., abrasive blasting, sanding, and painting).

8.Q.5 Additional Inspection Requirements (See also Part 3.1)

Include the following in all quarterly routine facility inspections: pressure washing areas; blasting, sanding, and painting areas; material storage areas; engine maintenance and repair areas; material handling areas; drydock area; and general yard area.

8.Q.6 Indicator Monitoring (See also Part 4.2.1)

Table 8.Q-1 identifies indicator monitoring that applies to the specific subsectors of Sector Q. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.Q-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector Q (Subsector Q1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector Q1. Water Transportation Facilities (SIC Code 4491 only)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.Q.7 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.Q-2 identifies benchmarks that apply to Sector Q. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.Q-2.

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Subsector Q1. Water Transportation Facilities (SIC 4412-4499)	Total Recoverable Aluminum	1,100 µg/L
	Total Recoverable Lead (freshwater)[2] Total Recoverable Lead (saltwater)[1]	Hardness Dependent 210 µg/L
	Total Recoverable Zinc	Hardness

Table 8.Q-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
	(freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Dependent 90 µg/L

[1]Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.
[2]The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	**Lead** (µg/L)	**Zinc** (µg/L)
0-24.99 mg/L	14	37
25-49.99 mg/L	24	52
50-74.99 mg/L	45	80
75-99.99 mg/L	69	107
100-124.99 mg/L	95	132
125-149.99 mg/L	123	157
150-174.99 mg/L	152	181
175-199.99 mg/L	182	204
200-224.99 mg/L	213	227
225-249.99 mg/L	246	249
250+ mg/L	262	260

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart R – Sector R – Ship and Boat Building and Repair Yards

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.R.1 Covered Stormwater Discharges

The requirements in Subpart R apply to stormwater discharges associated with industrial activity from Ship and Boat Building and Repair Yards as identified by the SIC Codes specified under Sector R in Table D-1 of Appendix D of the permit.

8.R.2 Limitations on Coverage

8.R.2.1 Prohibition of Non-Stormwater Discharges. (See also Part 1.1.3) The following are not authorized by this permit: discharges from vessels including bilge and ballast water, sanitary wastes, pressure wash water, and cooling water. (EPA includes these prohibited non- stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.R.3 Additional Technology-Based Effluent Limits

8.R.3.1 Good Housekeeping Measures. (See also Part 2.1.2.2)

8.R.3.1.1 ***Pressure Washing Area***. If pressure washing is used to remove marine growth from vessels, the discharged water must be permitted as a process wastewater by a separate NPDES permit.

8.R.3.1.2 ***Blasting and Painting Area.*** Minimize the potential for spent abrasives, paint chips, and overspray to be discharged into receiving waters or the storm sewer system. Contain all blasting and painting activities, or use other measures, to prevent the discharge of the contaminants (e.g., hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris). When necessary, regularly clean stormwater conveyances of deposits of abrasive blasting debris and paint chips.

8.R.3.1.3 ***Material Storage Areas.*** Store and plainly label all containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) in a protected, secure location away from drains. Minimize the contamination of precipitation or stormwater from the storage areas. If abrasive blasting is performed, discuss the storage and disposal of spent abrasive materials generated at the facility. Implement an inventory control plan to limit the presence of potentially hazardous materials onsite.

8.R.3.1.4 ***Engine Maintenance and Repair Areas.*** Minimize the contamination of precipitation or stormwater from all areas used for engine maintenance and repair through implementation of control measures such as the following, where determined to be feasible (list not exclusive): performing all maintenance activities indoors; maintaining an organized inventory of materials used in the shop; draining all parts of fluid prior to disposal; prohibiting the practice of hosing down the shop floor; using dry cleanup

methods; and treating and/or recycling stormwater collected from the maintenance area.

8.R.3.1.5 ***Material Handling Area***. Minimize the discharge of pollutants in stormwater from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels) through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering fueling areas, using spill and overflow protection, mixing paints and solvents in a designated area (preferably indoors or under a shed), and minimizing stormwater run-on to material handling areas.

8.R.3.1.6 ***Drydock Activities.*** Routinely maintain and clean the drydock to minimize pollutants in stormwater. Clean accessible areas of the drydock prior to flooding and final cleanup following removal of the vessel and raising the dock. Include procedures for cleaning up oil, grease, or fuel spills occurring on the drydock. To minimize discharges of pollutants in stormwater from drydock activities, implement control measures such as the following, where determined to be feasible (list not exclusive): sweeping rather than hosing off debris and spent blasting material from accessible areas of the drydock prior to flooding; and having absorbent materials and oil containment booms readily available to clean up and contain any spills.

8.R.3.2 ***Employee Training.*** (See also Part 2.1.2.8) As part of your employee training program, address, at a minimum, the following activities (as applicable): used oil management, spent solvent management, disposal of spent abrasives, disposal of vessel wastewaters, spill prevention and control, fueling procedures, general good housekeeping practices, painting and blasting procedures, and used battery management.

8.R.3.3 ***Preventive Maintenance.*** (See also Part 2.1.2.3) As part of your preventive maintenance program, perform timely inspection and maintenance of stormwater management devices (e.g., cleaning oil and water separators and sediment traps to ensure that spent abrasives, paint chips, and solids will be intercepted and retained prior to entering the storm drainage system), as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters.

8.R.4 **Additional SWPPP Requirements**

8.R.4.1 ***Drainage Area Site Map***. (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: fueling; engine maintenance or repair; vessel maintenance or repair; pressure washing; painting; sanding; blasting; welding; metal fabrication; loading and unloading areas; treatment, storage, and waste disposal areas; liquid storage tanks; liquid storage areas (e.g., paint, solvents, resins); and material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

8.R.4.2 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Document in your SWPPP the following additional sources and activities that have potential pollutants associated with them (if applicable): outdoor manufacturing or processing activities (e.g., welding, metal fabricating) and significant dust or particulate generating processes (e.g., abrasive blasting, sanding, and painting).

8.R.4.3 ***Documentation of Good Housekeeping Measures.*** Document in your SWPPP any good housekeeping measures implemented to meet the effluent limits in Part 8.R.3.

8.R.4.3.1 ***Blasting and Painting Areas.*** Document in the SWPPP any standard operating practices relating to blasting and painting (e.g., prohibiting uncontained blasting and painting over open water or prohibiting blasting and painting during windy conditions, which can render containment ineffective).

8.R.4.3.2 ***Storage Areas.*** Specify in your SWPPP which materials are stored indoors, and contain or enclose or use other measures for those stored outdoors.

8.R.5 Additional Inspection Requirements (See also Part 3.1)

Include the following in all quarterly routine facility inspections: pressure washing areas; blasting, sanding, and painting areas; material storage areas; engine maintenance and repair areas; material handling areas; drydock area; and general yard area.

8.R.6 Indicator Monitoring (See also Part 4.2.1)

Table 8.R-1 identifies indicator monitoring that applies to the specific subsectors of Sector R. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.R-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector R (Subsector R1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector R1. Ship and Boat Building or Repairing Yards (SIC Code 3731, 3732)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values
	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart S – Sector S – Air Transportation

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.S.1 Covered Stormwater Discharges

The requirements in Subpart S apply to stormwater discharges associated with industrial activity from Air Transportation facilities identified by the SIC Codes specified under Sector S in Table D-1 of Appendix D of the permit.

8.S.2 Limitation on Coverage

8.S.2.1 ***Limitations on Coverage.*** This permit authorizes stormwater discharges from only those portions of the air transportation facility that are involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling and lubrication), equipment cleaning operations or deicing operations.

Note: the term "deicing" in this permit will generally be used to mean both deicing (removing frost, snow or ice) and anti-icing (preventing accumulation of frost, snow or ice) activities, unless specific mention is made otherwise.

8.S.2.2 ***Prohibition of Non-Stormwater Discharges***. (See also Part 1.1.3 and Part 8.S.5.3) This permit does not authorize the discharge of aircraft, ground vehicle, runway and equipment wash waters; nor the dry weather discharge of deicing chemicals. Such discharges must be covered by separate NPDES permit(s). Note that a discharge resulting from snowmelt is not a dry weather discharge. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.S.3 Multiple Operators at Air Transportation Facilities

Air transportation facilities often have more than one operator who could discharge stormwater associated with industrial activity. Operators include the airport authority and airport tenants, including air passenger or cargo companies, fixed based operators, and other parties who routinely perform industrial activities on airport property.

8.S.3.1 ***Permit Coverage/Submittal of NOIs***. Where an airport transportation facility has multiple industrial operators that discharge stormwater, each individual operator must obtain coverage under an NPDES stormwater permit. To obtain coverage under the MSGP, all such operators must meet the eligibility requirements in Part 1 and must submit an NOI, per Part 1.3.2. (or, if appropriate, a no exposure certification per Part 1.5).

8.S.3.2 ***MSGP Implementation Responsibilities for Airport Authority and Tenants***. The airport authority, in collaboration with its tenants, may choose to implement certain MSGP requirements on behalf of its tenants in order to increase efficiency and eliminate redundancy or duplication of effort. Options available to the airport authority and its tenants for implementation of MSGP requirements include:

- The airport authority performs certain activities on behalf of itself and its tenants and reports on its activities;
- Tenants provide the airport authority with relevant inputs about tenants' activities, including deicing chemical usage*, and the airport authority compiles and reports on tenants' and its own activities;
- Tenants independently perform, document and submit required information on their activities.

*Tenants who report their deicing chemical usage to the airport authority and rely on the airport authority to perform monitoring should not check the glycol and urea use box on their NOI forms.

8.S.3.3 ***SWPPP Requirements***. A single comprehensive SWPPP must be developed for all stormwater discharges associated with industrial activity at the airport before submittal of any NOIs. The comprehensive SWPPP should be developed collaboratively by the airport authority and tenants. If any operator develops a SWPPP for discharges from its own areas of the airport, that SWPPP must be coordinated and integrated with the comprehensive SWPPP. All operators and their separate SWPPP contributions and compliance responsibilities must be clearly identified in the comprehensive SWPPP, which all operators must sign and certify per Part 6.2.7. As applicable, the SWPPP must clearly specify the MSGP requirements to be complied with by:

- The airport authority for itself;
- The airport authority on behalf of its tenants;
- Tenants for themselves.

For each activity that an operator (e.g., the airport authority) conducts on behalf of another operator (e.g., a tenant), the SWPPP must describe a process for reporting results to the latter operator and for ensuring appropriate follow-up, if necessary, by all affected operators. This is to ensure all actions are taken to correct any potential deficiencies or permit violations. For example, where the airport authority is conducting monitoring for itself and its tenants, the SWPPP must identify how the airport authority will share the monitoring results with its tenants, and then follow-up with its tenants where there are any exceedances of benchmarks, effluent limits, or water quality standards. In turn, the SWPPP must describe how the tenants will also follow-up to ensure permit compliance.

8.S.3.4 ***Duty to Comply.*** All individual operators are responsible for implementing their assigned portion of the comprehensive SWPPP, and operators must ensure that their individual activities do not render another operator's stormwater controls ineffective. In addition, the standard permit conditions found in Appendix B apply to each individual operator, including B.1 Duty to Comply (which states, in part, "You [each individual operator] must comply with all conditions of this permit."). For multiple operators at an airport this means that each individual operator remains responsible for ensuring all requirements of its own MSGP coverage are met regardless of whether the comprehensive SWPPP allocates the actual implementation of any of those responsibilities to another entity. That is, the failure of the entity allocated responsibility in the SWPPP to implement an MSGP requirement on behalf of other operators does not negate the other operators' ultimate liability.

8.S.4 Additional Technology-Based Effluent Limits

8.S.4.1 *Good Housekeeping Measures.* (See also Part 2.1.2.2)

8.S.4.1.1 ***Aircraft, Ground Vehicle and Equipment Maintenance Areas***. Minimize the contamination of stormwater from all areas used for aircraft, ground vehicle and equipment maintenance (including the maintenance conducted on the terminal apron and in dedicated hangers) through implementation of control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): performing maintenance activities indoors; maintaining an organized inventory of material used in the maintenance areas; draining all parts of fluids prior to disposal; prohibiting the practice of hosing down the apron or hanger floor; using dry cleanup methods; and collecting the stormwater from the maintenance area and providing treatment or recycling.

8.S.4.1.2 ***Aircraft, Ground Vehicle and Equipment Cleaning Areas.*** Clearly demarcate these areas on the ground using signage or other appropriate means. Minimize the contamination of stormwater from cleaning areas.

8.S.4.1.3 ***Aircraft, Ground Vehicle and Equipment Storage Areas.*** Store all aircraft, ground vehicles and equipment awaiting maintenance in designated areas only and implement control measures to minimize the discharge of pollutants in stormwater from these storage areas such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): storing aircraft and ground vehicles indoors; using drip pans for the collection of fluid leaks; and perimeter drains, dikes or berms surrounding the storage areas.

8.S.4.1.4 ***Material Storage Areas.*** Maintain the vessels of stored materials (e.g., used oils, hydraulic fluids, spent solvents, and waste aircraft fuel) in good condition to prevent or minimize contamination of stormwater. Also plainly label the vessels (e.g., "used oil," "Contaminated Jet A"). To minimize contamination of precipitation/stormwater from these areas, implement control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): storing materials indoors; storing waste materials in a centralized location; and installing berms/dikes around storage areas.

8.S.4.1.5 ***Airport Fuel System and Fueling Areas.*** Minimize the discharge of pollutants in stormwater from airport fuel system and fueling areas through implementation of control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): implementing spill and overflow practices (e.g., placing absorptive materials beneath aircraft during fueling operations); using only dry cleanup methods; and collecting stormwater. If you have implemented a SPCC plan developed in accordance with the 2006 amendments to the SPCC rule, you may cite the relevant aspects from your SPCC plan that comply with the requirements of this section in your SWPPP.

8.S.4.1.6 ***Source Reduction.*** Consistent with safety considerations, minimize the use of urea and glycol-based deicing chemicals to reduce the aggregate amount of deicing chemicals used that could add pollutants to stormwater discharges.

- ***Runway Deicing Operations.*** To minimize the discharge of pollutants in stormwater from runway deicing operations, implement source reduction control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): metered application of chemicals; pre-wetting dry chemical constituents prior to application; installing a runway ice detection system; implementing anti-icing operations as a preventive measure against ice buildup; heating sand; and product substitution. Chemical options to replace pavement deicers (urea or glycol) include (list not exclusive): potassium acetate; magnesium acetate; calcium acetate; and anhydrous sodium acetate.
- ***Aircraft Deicing Operations.*** Minimize the discharge of pollutants in stormwater from aircraft deicing operations. Determine whether excessive application of deicing chemicals occurs and adjust as necessary, consistent with considerations of flight safety. Determine whether alternatives to glycol and whether containment measures for applied chemicals are feasible. Implement control measures for reducing deicing fluid such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): forced-air deicing systems, computer-controlled fixed-gantry systems, infrared technology, hot water, varying glycol content to air temperature, enclosed-basket deicing trucks, mechanical methods, solar radiation, hangar storage, aircraft covers, and thermal blankets for MD-80s and DC-9s. Consider using ice- detection systems and airport traffic flow strategies and departure slot allocation systems where feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations. The evaluations and determinations required by this Part should be carried out by the personnel most familiar with the particular aircraft and flight operations and related systems in question (versus an outside entity such as the airport authority).

8.S.4.1.7 ***Management of Stormwater***. (See also Part 2.1.2.6) Minimize the discharge of pollutants in stormwater from deicing chemicals in stormwater. To minimize discharges of pollutants in stormwater from aircraft deicing, implement stormwater control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): installing a centralized deicing pad to recover deicing fluid following application; plug- and-pump (PnP); using vacuum/collection trucks (glycol recovery vehicles); storing contaminated stormwater/deicing fluids in tanks; recycling collected deicing fluid where feasible; releasing controlled amounts to a publicly owned treatment works; separation of contaminated snow; conveying contaminated stormwater into an impoundment for biochemical decomposition (be aware of attracting wildlife that may prove hazardous to flight operations); and directing stormwater into vegetative swales or other

infiltration measures. To minimize discharges of pollutants in stormwater from runway deicing, implement stormwater control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): mechanical systems (snow plows, brushes); conveying contaminated stormwater into swales and/or an impoundment; and pollution prevention practices such as ice detection systems, and airfield prewetting.

When applying deicing fluids during non-precipitation events (also referred to as "clear ice deicing"), implement control measures to prevent unauthorized discharge of pollutants (dry-weather discharges of pollutants would need coverage under an NPDES wastewater permit), or to minimize the discharge of pollutants from deicing fluids in later stormwater discharges, implement control measures such as the following, where determined to be feasible and that accommodate considerations safety, space, operational constraints, and flight considerations (list not exclusive): recovering deicing fluids; preventing the fluids from entering storm sewers or other stormwater discharge conveyances (e.g., covering storm sewer inlets, using booms, installing absorptive interceptors in the drains); releasing controlled amounts to a publicly owned treatment works Used deicing fluid should be recycled whenever practicable.

8.S.4.1.8 ***Deicing Season***. You must determine the seasonal timeframe (e.g., December- February, October - March) during which deicing activities typically occur at the facility. Implementation of control measures, including any BMPs, facility inspections and monitoring must be conducted with particular emphasis throughout the defined deicing season. If you meet the deicing chemical usage thresholds of 100,000 gallons glycol and/or 100 tons of urea, the deicing season you identified is the timeframe during which you must obtain the four required benchmark monitoring event results for deicing-related parameters, i.e., BOD, COD, ammonia and pH. See also Part8.S.8.

8.S.5 **Additional SWPPP Requirements**

8.S.5.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in the SWPPP the following areas of the facility and indicate whether activities occurring there may be exposed to precipitation/stormwater: aircraft and runway deicing operations; fueling stations; aircraft, ground vehicle and equipment maintenance/cleaning areas; and storage areas for aircraft, ground vehicles and equipment awaiting maintenance.

8.S.5.2 ***Potential Pollutant Sources.*** (See also Part 6.2.3) In the inventory of exposed materials, describe in the SWPPP the potential for the following activities and facility areas to contribute pollutants to stormwater discharges: aircraft, runway, ground vehicle and equipment maintenance and cleaning; and aircraft and runway deicing operations (including apron and centralized aircraft deicing stations, runways, taxiways and ramps). If deicing chemicals are used, a record of the types (including the Safety Data Sheets [SDS]) used and the monthly quantities, either as measured or, in the absence of metering, using best estimates, must be maintained. This includes all deicing chemicals, not just glycols and urea (e.g., potassium acetate), because large quantities of these other chemicals can still have an adverse impact on

receiving waters. Deicing operators must provide the above information to the airport authority for inclusion with any comprehensive airport SWPPPs.

8.S.5.3 ***Vehicle and Equipment Wash Water Requirements***. If wash water is handled in a manner that does not involve separate NPDES permitting or local pretreatment requirements (e.g., hauled offsite, retained onsite), describe the disposal method and include all pertinent information (e.g., frequency, volume, destination) in your SWPPP. Discharges of vehicle and equipment wash water are not authorized by this permit for this sector.

8.S.5.4 ***Documentation of Control Measures Used for Management of Stormwater***. Document in your SWPPP the control measures used for collecting or containing contaminated melt water from collection areas used for disposal of contaminated snow.

8.S.6 Additional Inspection Requirements

At a minimum, you must conduct facility inspections at least monthly during the deicing season (e.g., October through April for most mid-latitude airports). If your facility needs to deice before or after this period, expand the monthly inspections to include all months during which deicing chemicals may be used. The Director may specifically require you to increase inspection frequencies.

8.S.7 Indicator Monitoring (See also Part 4.2.1)

Table 8.S-1 identifies indicator monitoring that applies to the specific subsectors of Sector S. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.S-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector S (Subsector S1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector S1. Air Transportation Facilities (SIC Code 4512-4581)	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.S.8 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.S-2 identifies benchmarks that apply to Sector S. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.S-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
For airports where a single permittee, or a combination of permitted facilities use more than 100,000 gallons of pure glycol in glycol- based deicing fluids and/or 100 tons or more of urea on an average annual basis, monitor the first four parameters in ONLY those discharge points that collect stormwater from areas where deicing activities occur (SIC 4512-4581).	Biochemical Oxygen Demand (BOD_5)[1]	30 mg/L
	Chemical Oxygen Demand (COD)[1]	120 mg/L
	Ammonia[1]	2.14 mg/L
	pH[1]	6.0 - 9.0 s.u.

[1] These are deicing-related parameters. Collect the four benchmark samples, and any required follow-up benchmark samples, during the timeframe defined in Part 8.S.4.1.8 when deicing activities are occurring.

8.S.9 Effluent Limitations Based on Effluent Limitations Guidelines and New Source Performance Standards (See also Part 4.2.3.1)

8.S.9.1 ***Airfield Pavement Deicing***. For both existing and new "primary airports" (as defined at 40 CFR 449.2) with 1,000 or more annual non-propeller aircraft departures that discharge stormwater from airfield pavement deicing activities, there shall be no discharge of airfield pavement deicers containing urea. To comply with this limitation, such airports must do one of the following: (1) certify annually on the annual report that you do not use pavement deicers containing urea, or (2) meet the effluent limitation in Table 8.S-3.

8.S.9.2 ***Aircraft Deicing***. Airports that are both "primary airports" (as defined at 40 CFR 449.2) and new sources ("new airports") with 1,000 or more annual non-propeller aircraft departures must meet the applicable requirements for aircraft deicing at 40 CFR 449.11(a). Discharges of the collected aircraft deicing fluid directly to waters of the U.S. are not eligible for coverage under this permit.

8.S.9.3 ***Monitoring, Reporting and Recordkeeping***. For new and existing airports subject to the effluent limitations in Part 8.S.9.1 or 8.S.9.2 of this permit, you must comply with the applicable monitoring, reporting and recordkeeping requirements outlined in 40 CFR 449.20.

Table 8.S-3		
Industrial Activity	**Parameter**	**Effluent Limitation**
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Ammonia as Nitrogen	14.7 mg/L, daily maximum

Part 8 – Sector-Specific Requirements for Industrial Activity
Subpart T – Sector T – Treatment Works

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.T.1 Covered Stormwater Discharges

The requirements in Subpart T apply to stormwater discharges associated with industrial activity from Treatment Works as identified by the Activity Code specified under Sector T in Table D-1 of Appendix D of the permit.

8.T.2 Industrial Activities Covered by Sector T

The requirements listed under this part apply to all existing point source stormwater discharges associated with the following activities:

8.T.2.1 Treatment works treating domestic sewage, or any other sewage sludge or wastewater treatment device or system used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge; that are located within the confines of a facility with a design flow of 1.0 million gallons per day (MGD) or more; or are required to have an approved pretreatment program under 40 CFR Part 403.

8.T.2.2 The following are not required to have permit coverage: farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located within the facility, or areas that are in compliance with Section 405 of the CWA.

8.T.3 Limitations on Coverage

8.T.3.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) Sanitary and industrial wastewater and equipment and vehicle wash water are not authorized by this permit. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.T.4 Additional Technology-Based Effluent Limits

8.T.4.1 ***Control Measures.*** (See also Part 2.1.2) To minimize the discharge of pollutants in stormwater, implement control measures such as the following, where determined to be feasible (list not exclusive): routing stormwater to the treatment works; or covering exposed materials (i.e., from the following areas: grit, screenings and other solids handling, storage or disposal areas; sludge drying beds; dried sludge piles; compost piles; and septage or hauled waste receiving station).

8.T.4.2 ***Employee Training.*** (See also Part 2.1.2.8) At a minimum, training must address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and controls; fueling procedures; general good housekeeping practices; and proper procedures for using fertilizer, herbicides, and pesticides.

8.T.5 Additional SWPPP Requirements

8.T.5.1 ***Site Map.*** (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; septage or hauled waste receiving station; and storage areas for process chemicals, petroleum products, solvents, fertilizers, herbicides, and pesticides.

8.T.5.2 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Document in your SWPPP the following additional sources and activities that have potential pollutants associated with them, as applicable: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; septage or hauled waste receiving station; and access roads and rail lines.

8.T.5.3 ***Wastewater and Wash Water Requirements.*** If wastewater and/or vehicle and equipment wash water is not covered by another NPDES permit but is handled in another manner (e.g., hauled offsite, retained onsite), the disposal method must be described and all pertinent information (e.g., frequency, volume, destination) must be included in your SWPPP. Discharges of vehicle and equipment wash water, including tank cleaning operations, are not authorized by this permit for this sector.

8.T.6 Additional Inspection Requirements (See also Part 3.1)

Include the following areas in all inspections: access roads and rail lines; grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; and septage or hauled waste receiving station.

8.T.7 Indicator Monitoring (See also Part 4.2.1)

Table 8.T-1 identifies indicator monitoring that applies to the specific subsectors of Sector T. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.T-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector T (Subsector T1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector T1. Treatment Works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

Table 8.T-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA (Activity Code TW)		

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart U – Sector U – Food and Kindred Products

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.U.1 Covered Stormwater Discharges

The requirements in Subpart U apply to stormwater discharges associated with industrial activity from Food and Kindred Products facilities as identified by the SIC Codes specified in Table D-1 of Appendix D of the permit.

8.U.2 Limitations on Coverage

8.U.2.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) The following discharges are not authorized by this permit: discharges containing boiler blowdown, cooling tower overflow and blowdown, ammonia refrigeration purging, and vehicle washing and clean-out operations. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.U.3 Additional Technology-Based Limitations

8.U.3.1 ***Employee Training***. (See also Part 2.1.2.8) Address pest control in your employee training program.

8.U.4 Additional SWPPP Requirements

8.U.4.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in your SWPPP the locations of the following activities if they are exposed to precipitation or stormwater: vents and stacks from cooking, drying, and similar operations; dry product vacuum transfer lines; animal holding pens; spoiled product; and broken product container storage areas.

8.U.4.2 ***Potential Pollutant Sources***. (See also Part 6.2.3) Document in your SWPPP, in addition to food and kindred products processing-related industrial activities, application and storage of pest control chemicals (e.g., rodenticides, insecticides, fungicides) used on plant grounds.

8.U.5 Additional Inspection Requirements (See also Part 3.1)

Inspect on a quarterly basis, at a minimum, the following areas where the potential for exposure to stormwater exists: loading and unloading areas for all significant materials; storage areas, including associated containment areas; waste management units; vents and stacks emanating from industrial activities; spoiled product and broken product container holding areas; animal holding pens; staging areas; and air pollution control equipment.

8.U.6 Indicator Monitoring (See also Part 4.2.1)

Table 8.U-1 identifies indicator monitoring that applies to the specific subsectors of Sector U. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.U-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Applies to all Sector U (Subsectors U1, U2, and U3) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector U3. Meat Products (SIC Code 2011-2015); Dairy Products (SIC Code 2021-2026); Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties (SIC Code 2032-2038); Bakery Products (SIC Code 2051-2053); Sugar and Confectionery Products (SIC Code 2061-2068); Beverages (SIC Code 2082-2087); Miscellaneous Food Preparations and Kindred Products (SIC Code 2091-2099); Tobacco Products (SIC Code 2111-2141)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.U.7 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.U-2 identifies benchmarks that apply to the specific subsectors of Sector U. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.U-2.		
Subsector (You may be subject to requirements for more than one Sector / Subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector U1. Grain Mill Products (SIC 2041-2048)	Total Suspended Solids (TSS)	100 mg/L
Subsector U2. Fats and Oils Products (SIC 2074-2079)	Biochemical Oxygen Demand (BOD_5)	30 mg/L
	Chemical Oxygen Demand (COD)	120 mg/L
	Nitrate plus Nitrite Nitrogen	0.68 mg/L
	Total Suspended Solids (TSS)	100 mg/L

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart V – Sector V – Textile Mills, Apparel, and Other Fabric Products

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.V.1 Covered Stormwater Discharges

The requirements in Subpart V apply to stormwater discharges associated with industrial activity from Textile Mills, Apparel, and Other Fabric Product manufacturing as identified by the SIC Codes specified under Sector V in Table D-1 of Appendix D of the permit.

8.V.2 Limitations on Coverage

8.V.2.1 ***Prohibition of Non-Stormwater Discharges.*** (See also Part 1.1.3) The following discharges are not authorized by this permit: discharges of wastewater (e.g., wastewater resulting from wet processing or from any processes relating to the production process), reused or recycled water, and waters used in cooling towers. If you have these types of discharges from your facility, you must cover them under a separate NPDES permit. (EPA includes these prohibited non-stormwater discharges here solely as a helpful reminder to the operator that the only non-stormwater discharges authorized by this permit are at Part 1.2.2.)

8.V.3 Additional Technology-Based Limitations

8.V.3.1 ***Good Housekeeping Measures.*** (See also Part 2.1.2.2)

8.V.3.1.1 **Material Storage Areas.** Plainly label and store all containerized materials (e.g., fuels, petroleum products, solvents, and dyes) in a protected area, away from drains. Minimize contamination of the stormwater from such storage areas. Also consider an inventory control plan to prevent excessive purchasing of potentially hazardous substances. For storing empty chemical drums or containers, ensure that the drums and containers are clean (consider triple-rinsing) and that there is no contact of residuals with precipitation or stormwater. Collect and dispose of wash water from these cleanings properly.

8.V.3.1.2 ***Material Handling Areas***. Minimize contamination of stormwater from material handling operations and areas through implementation of control measures such as the following, where determined to be feasible: using spill and overflow protection; covering fueling areas; and covering or enclosing areas where the transfer of material may occur. When applicable, address the replacement or repair of leaking connections, valves, transfer lines and pipes that may carry chemicals, dyes or wastewater.

8.V.3.1.3 ***Fueling Areas.*** Minimize contamination of stormwater from fueling areas through implementation of control measures such as the following, where determined to be feasible: covering the fueling area; using spill and overflow protection; minimizing run-on of stormwater to the fueling areas; using dry cleanup methods; and treating and/or recycling stormwater collected from the fueling area.

8.V.3.1.4 ***Above-Ground Storage Tank Area.*** Minimize contamination of stormwater from above-ground storage tank areas, including the associated piping and valves, through implementation of control measures such as the following, where determined to be feasible (list not exclusive): regular cleanup of these areas; including measures for tanks, piping and valves explicitly in your SPCC program; minimizing discharges of stormwater from adjacent areas; restricting access to the area; inserting filters in adjacent catch basins; providing absorbent booms in unbermed fueling areas; using dry cleanup methods; and permanently sealing drains within critical areas that may discharge to a storm drain.

8.V.3.1.5 ***Employee Training***. (See also Part 2.1.2.8) As part of your employee training program, address, at a minimum, the following activities (as applicable): use of reused and recycled waters, solvents management, proper disposal of dyes, proper disposal of petroleum products and spent lubricants, spill prevention and control, fueling procedures, and general good housekeeping practices.

8.V.4 Additional SWPPP Requirements

8.V.4.1 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Document in your SWPPP the following additional sources and activities that have potential pollutants associated with them: industry-specific significant materials and industrial activities (e.g., backwinding, beaming, bleaching, backing bonding, carbonizing, carding, cut and sew operations, desizing, drawing, dyeing locking, fulling, knitting, mercerizing, opening, packing, plying, scouring, slashing, spinning, synthetic-felt processing, textile waste processing, tufting, turning, weaving, web forming, winging, yarn spinning, and yarn texturing).

8.V.4.2 ***Description of Good Housekeeping Measures for Material Storage Areas***. Document in the SWPPP your containment area or enclosure for materials stored outdoors in connection with Part 8.V.3.1.1 above.

8.V.5 Additional Inspection Requirements

Inspect, at least monthly, the following activities and areas (at a minimum): transfer and transmission lines, spill prevention, good housekeeping practices, management of process waste products, and all structural and nonstructural management practices.

8.V.6 Indicator Monitoring (See also Part 4.2.1)

Table 8.V-1 identifies indicator monitoring that applies to the specific subsectors of Sector V. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.V-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector V (Subsector V1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

Table 8.V-1		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Indicator Monitoring Parameter**	**Indicator Monitoring Threshold**
Subsector V1. Textile Mill Products (SIC Code 2211-2299); Apparel and Other Finished Products Made from Fabrics and Similar Materials (SIC Code 2311-2399); Leather and Leather Products (note: see Sector Z1 for Leather Tanning and Finishing) (SIC Code 3131-3199)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart W – Sector W – Furniture and Fixtures

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.W.1 Covered Stormwater Discharges

The requirements in Subpart W apply to stormwater discharges associated with industrial activity from Furniture and Fixtures facilities as identified by the SIC Codes specified under Sector W in Table D-1 of Appendix D of the permit.

8.W.2 Additional SWPPP Requirements

8.W.2.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: material storage (including tanks or other vessels used for liquid or waste storage) areas; outdoor material processing areas; areas where wastes are treated, stored, or disposed of; access roads; and rail spurs.

8.W.3 Indicator Monitoring (See also Part 4.2.1)

Table 8.W-1 identifies indicator monitoring that applies to the specific subsectors of Sector W. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.W-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector W (Subsector W1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector W1. Wood Kitchen Cabinets (SIC Code 2434); Furniture and Fixtures (SIC Code 2511-2599)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart X – Sector X – Printing and Publishing

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.X.1 Covered Stormwater Discharges

The requirements in Subpart X apply to stormwater discharges associated with industrial activity from Printing and Publishing facilities as identified by the SIC Codes specified under Sector X in Table D-1 of Appendix D of the permit.

8.X.2 Additional Technology-Based Effluent Limits

8.X.2.1 *Good Housekeeping Measures.* (See also Part 2.1.2.2)

8.X.2.1.1 ***Material Storage Areas.*** Plainly label and store all containerized materials (e.g., skids, pallets, solvents, bulk inks, hazardous waste, empty drums, portable and mobile containers of plant debris, wood crates, steel racks, and fuel oil) in a protected area, away from drains. Minimize contamination of the stormwater from such storage areas. Also consider an inventory control plan to prevent excessive purchasing of potentially hazardoussubstances.

8.X.2.1.2 ***Material Handling Area.*** Minimize contamination of stormwater from material handling operations and areas (e.g., blanket wash, mixing solvents, loading and unloading materials) through implementation of control measures such as the following, where determined to be feasible (list not exclusive): using spill and overflow protection; covering fueling areas; and covering or enclosing areas where the transfer of materials may occur. When applicable, address the replacement or repair of leaking connections, valves, transfer lines, and pipes that may carry chemicals orwastewater.

8.X.2.1.3 ***Fueling Areas***. Minimize contamination of stormwater from fueling areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering the fueling area; using spill and overflow protection; minimizing discharges of stormwater to the fueling areas; using dry cleanup methods; and treating and/or recycling stormwater collected from the fueling area.

8.X.2.1.4 ***Above Ground Storage Tank Area.*** Minimize contamination of the stormwater from above-ground storage tank areas, including the associated piping and valves, through implementation of control measures such as the following, where determined to be feasible (list not exclusive): regularly cleaning these areas; explicitly addressing tanks; piping and valves in the SPCC program; minimizing stormwater discharges from adjacent areas; restricting access to the area; inserting filters in adjacent catch basins; providing absorbent booms in unbermed fueling areas; using dry cleanup methods; and permanently sealing drains within critical areas that may discharge to a storm drain.

8.X.2.2 ***Employee Training.*** (See also Part 2.1.2.8) As part of your employee training program, address, at a minimum, the following activities (as applicable): spent solvent management, spill prevention and control, used oil management, fueling procedures, and general good housekeeping practices.

8.X.3 Additional SWPPP Requirements

8.X.3.1 Description of Good Housekeeping Measures for Material Storage Areas. In connection with Part 8.X.2.1.1, describe in the SWPPP the containment area or enclosure for materials stored outdoors.

8.X.4 Indicator Monitoring (See also Part 4.2.1)

Table 8.X-1 identifies indicator monitoring that applies to the specific subsectors of Sector X. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.X-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector X (Subsector X1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector X1. Printing, Publishing, and Allied Industries (SIC Code 2711-2796)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart Y – Sector Y – Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.Y.1 Covered Stormwater Discharges

The requirements in Subpart Y apply to stormwater discharges associated with industrial activity from Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries facilities as identified by the SIC Codes specified under Sector Y in Table D-1 of Appendix D of the permit.

8.Y.2 Additional Technology-Based Effluent Limits

8.Y.2.1 ***Controls for Rubber Manufacturers.*** (See also Part 2.1.2) Minimize the discharge of zinc in your stormwater discharges. Parts 8.Y.2.1.1 to 8.Y.2.1.5 give possible sources of zinc to be reviewed and list control measures to be implemented where determined to be feasible. Implement additional control measures such as the following, where determined to be feasible (list not exclusive): using chemicals purchased in pre-weighed, sealed polyethylene bags; storing in-use materials in sealable containers, ensuring an airspace between the container and the cover to minimize "puffing" losses when the container is opened; and using automatic dispensing and weighing equipment.

8.Y.2.1.1 ***Zinc Bags***. Ensure proper handling and storage of zinc bags at your facility through implementation of control measures such as the following, where determined to be feasible (list not exclusive): employee training on the handling and storage of zinc bags; indoor storage of zinc bags; cleanup of zinc spills without washing the zinc into the storm drain; and the use of 2,500- pound sacks of zinc rather than 50- to 100-pound sacks.

8.Y.2.1.2 ***Dumpsters.*** Minimize discharges of zinc from dumpsters through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering the dumpster; moving the dumpster indoors; and providing a lining for the dumpster.

8.Y.2.1.3 ***Dust Collectors and Baghouses.*** Minimize contributions of zinc to stormwater from dust collectors and baghouses. Replace or repair, as appropriate, improperly operating dust collectors and baghouses.

8.Y.2.1.4 ***Grinding Operations.*** Minimize contamination of stormwater as a result of dust generation from rubber grinding operations. Where determined to be feasible, install a dust collection system.

8.Y.2.1.5 ***Zinc Stearate Coating Operations.*** Minimize the potential for stormwater contamination from drips and spills of zinc stearate slurry that may be released to the storm drain. Where determined to be feasible, use alternative compounds to zinc stearate.

8.Y.2.2 Controls for Plastic Products Manufacturers. Minimize the discharge of plastic resin pellets in your stormwater discharges through implementation of control measures

such as the following, where determined to be feasible (list not exclusive): minimizing spills; cleaning up of spills promptly and thoroughly; sweeping thoroughly; pellet capturing; employee education; and disposal precautions.

8.Y.3 Additional SWPPP Requirements

8.Y.3.1 Potential Pollutant Sources for Rubber Manufacturers. (See also Part 6.2.3) Document in your SWPPP the use of zinc at your facility and the possible pathways through which zinc may be discharged in stormwater.

8.Y.4 Indicator Monitoring (See also Part 4.2.1)

Table 8.Y-1 identifies indicator monitoring that applies to the specific subsectors of Sector Y. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.Y-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector Y (Subsectors Y1 and Y2) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector Y2. Miscellaneous Plastics Products (SIC Code 3081-3089); Musical Instruments (SIC Code 3931); Dolls, Toys, Games, and Sporting and Athletic Goods (SIC Code 3942-3949); Pens, Pencils, and Other Artists' Materials (SIC Code 3951-3955 (except 3952 – see Sector C)); Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal (SIC Code 3961, 3965); Miscellaneous Manufacturing Industries (SIC Code 3991-3999)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.Y.5 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.Y-2 identifies benchmarks that apply to Sector Y. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.Y-2.		
Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Subsector Y1. Rubber Products Manufacturing (SIC 3011, 3021, 3052, 3053, 3061, 3069)	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L

[1]Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.
[2]The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	**Zinc** (µg/L)
0-24.99 mg/L	37
25-49.99 mg/L	52
50-74.99 mg/L	80
75-99.99 mg/L	107
100-124.99 mg/L	132
125-149.99 mg/L	157
150-174.99 mg/L	181
175-199.99 mg/L	204
200-224.99 mg/L	227
225-249.99 mg/L	249
250+ mg/L	260

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart Z – Sector Z – Leather Tanning and Finishing

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.Z.1 Covered Stormwater Discharges

The requirements in Subpart Z apply to stormwater discharges associated with industrial activity from Leather Tanning and Finishing facilities as identified by the SIC Code specified under Sector Z in Table D-1 of Appendix D of the permit.

8.Z.2 Additional Technology-Based Effluent Limits

8.Z.2.1 *Good Housekeeping Measures.* (See also Part 2.1.2.2)

8.Z.2.1.1 ***Storage Areas for Raw, Semiprocessed, or Finished Tannery By-products.*** Minimize contamination of stormwater from pallets and bales of raw, semiprocessed, or finished tannery by-products (e.g., splits, trimmings, shavings). Store or protect indoors with polyethylene wrapping, tarpaulins, roofed storage, etc. where practicable. Place materials on an impermeable surface and enclose or put berms (or equivalent measures) around the area to prevent stormwater run-on and discharges where practicable.

8.Z.2.1.2 ***Material Storage Areas.*** Label storage containers of all materials (e.g., specific chemicals, hazardous materials, spent solvents, waste materials) and minimize contact of such materials with stormwater.

8.Z.2.1.3 ***Buffing and Shaving Areas.*** Minimize contamination of stormwater with leather dust from buffing and shaving areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): implementing dust collection enclosures; implementing preventive inspection and maintenance programs; or other appropriate preventive measures.

8.Z.2.1.4 ***Receiving, Unloading, and Storage Areas.*** Minimize contamination of stormwater from receiving, unloading, and storage areas. If these areas are exposed, implement control measures such as the following, where determined to be feasible (list not exclusive): covering all hides and chemical supplies; diverting drainage to the process sewer; or grade berming or curbing the area to prevent stormwater discharges.

8.Z.2.1.5 ***Outdoor Storage of Contaminated Equipment.*** Minimize contact of stormwater with contaminated equipment through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering equipment, diverting drainage to the process sewer, and cleaning thoroughly prior to storage.

8.Z.2.1.6 ***Waste Management.*** Minimize contamination of stormwater from waste storage areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering dumpsters; moving waste management activities indoors; covering waste

piles with temporary covering material such as tarpaulins or polyethylene; and minimizing stormwater discharges by enclosing the area or building berms around the area.

8.Z.3 Additional SWPPP Requirements

8.Z.3.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Identify in your SWPPP where any of the following may be exposed to precipitation or stormwater: processing and storage areas of the beamhouse, tanyard, and re-tan wet finishing and dry finishing operations.

8.Z.3.2 ***Potential Pollutant Sources.*** (See also Part 6.2.3) Document in your SWPPP the following sources and activities that have potential pollutants associated with them (as appropriate): temporary or permanent storage of fresh and brine-cured hides; extraneous hide substances and hair; leather dust, scraps, trimmings, and shavings.

8.Z.4 Indicator Monitoring (See also Part 4.2.1)

Table 8.Z-1 identifies indicator monitoring that applies to the specific subsectors of Sector Z. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.Z-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector Z (Subsector Z1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector Z1. Leather Tanning and Finishing (SIC Code 3111)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart AA – Sector AA – Fabricated Metal Products

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.AA.1 Covered Stormwater Discharges

The requirements in Subpart AA apply to stormwater discharges associated with industrial activity from Fabricated Metal Products facilities as identified by the SIC Codes specified under Sector AA in Table D-1 of Appendix D of the permit.

8.AA.2 Additional Technology-Based Effluent Limits

8.AA.2.1 Good Housekeeping Measures. (See also Part 2.1.2.2)

8.AA.2.1.1 ***Raw Steel Handling Storage.*** Minimize the generation of and/or recover and properly manage scrap metals, fines, and iron dust. Include measures for containing materials within storage handling areas.

8.AA.2.1.2 Paints and Painting Equipment. Minimize exposure of paint and painting equipment to stormwater.

8.AA.2.2 Spill Prevention and Response Procedures. (See also Part 2.1.2.4) Ensure that the necessary equipment to implement a cleanup is available to personnel. The following areas should be addressed:

8.AA.2.2.1 Metal Fabricating Areas. Maintain clean, dry, orderly conditions in these areas. Use dry clean-up techniques where practicable.

8.AA.2.2.2 Storage Areas for Raw Metal. Keep these areas free of conditions that could cause, or impede appropriate and timely response to, spills or leakage of materials through implementation of control measures such as the following, where determined to be feasible (list not exclusive): maintaining storage areas so that there is easy access in the event of a spill, and labeling stored materials to aid in identifying spill contents.

8.AA.2.2.3 Metal Working Fluid Storage Areas. Minimize the potential for stormwater contamination from storage areas for metal working fluids.

8.AA.2.2.4 Cleaners and Rinse Water. Control and clean up spills of solvents and other liquid cleaners, control sand buildup and disbursement from sand-blasting operations, and prevent exposure of recyclable wastes. Substitute environmentally benign cleaners when possible.

8.AA.2.2.5 Lubricating Oil and Hydraulic Fluid Operations. Minimize the potential for stormwater contamination from lubricating oil and hydraulic fluid operations. Use monitoring equipment or other devices to detect and control leaks and overflows where feasible. Install perimeter controls such as dikes, curbs, grass filter strips, or equivalent measures where feasible.

8.AA.2.2.6 Chemical Storage Areas. Minimize stormwater contamination and accidental spillage in chemical storage areas. Include a program to inspect containers and identify proper disposal methods.

8.AA.2.3 Spills and Leaks. (See also Part 6.2.3.3) In your spill prevention and response procedures, required by Part 2.1.2.4, pay attention to the following materials (at a minimum): chromium, toluene, pickle liquor, sulfuric acid, zinc and other water priority chemicals, and hazardous chemicals and wastes.

8.AA.3 Additional SWPPP Requirements

8.AA.3.1 Drainage Area Site Map. (See also Part 6.2.2) Document in your SWPPP where any of the following may be exposed to precipitation or stormwater: raw metal storage areas; finished metal storage areas; scrap disposal collection sites; equipment storage areas; retention and detention basins; temporary and permanent diversion dikes or berms; right-of-way or perimeter diversion devices; sediment traps and barriers; processing areas, including outside painting areas; wood preparation; recycling; and raw material storage.

8.AA.3.2 Potential Pollutant Sources. (See also Part 6.2.3) Document in your SWPPP the following additional sources and activities that have potential pollutants associated with them: loading and unloading operations for paints, chemicals, and raw materials; outdoor storage activities for raw materials, paints, empty containers, corn cobs, chemicals, and scrap metals; outdoor manufacturing or processing activities such as grinding, cutting, degreasing, buffing, and brazing; onsite waste disposal practices for spent solvents, sludge, pickling baths, shavings, ingot pieces, and refuse and waste piles.

8.AA.4 Additional Inspection Requirements

8.AA.4.1 Inspections. (See also Part 3.1) At a minimum, include the following areas in all inspections: raw metal storage areas, finished product storage areas, material and chemical storage areas, spent solvents and chemical storage areas, recycling areas, loading and unloading areas, equipment storage areas, paint areas, drainage from roof and vehicle fueling and maintenance areas. Potential pollutants include chromium, zinc, lubricating oil, solvents, aluminum, oil and grease, methyl ethyl ketone, steel, and related materials.

8.AA.5 Indicator Monitoring (See also Part 4.2.1)

Table 8.AA-1 identifies indicator monitoring that applies to the specific subsectors of Sector AA. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.AA-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector AA (Subsectors AA1 and AA2) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

8.AA.6 Sector-Specific Benchmarks (See also Part 4.2.2)

Table 8.AA-2 identifies benchmarks that apply to the specific subsectors of Sector AA. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table 8.AA-2

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Subsector AA1. Fabricated Metal Products, except Coating (SIC 3411-3499; 3911-3915)	Total Recoverable Aluminum	1,100 µg/L
	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L
	Nitrate plus Nitrite Nitrogen	0.68 mg/L
Subsector AA2. Fabricated Metal Coating and Engraving (SIC 3479)	Total Recoverable Zinc (freshwater)[2] Total Recoverable Zinc (saltwater)[1]	Hardness Dependent 90 µg/L
	Nitrate plus Nitrite Nitrogen	0.68 mg/L

[1] Saltwater benchmark values apply to stormwater discharges into saline waters where indicated.
[2] The freshwater benchmark values of some metals are dependent on water hardness. For these parameters, permittees must determine the hardness of the receiving water (see Appendix J, "Calculating Hardness in Receiving Waters for Hardness Dependent Metals," for methodology), in accordance with Part 4.2.2.1, to identify the applicable 'hardness range' for determining their benchmark value applicable to their facility. Hardness Dependent Benchmarks follow in the table below:

Freshwater Hardness Range	Zinc (µg/L)
0-24.99 mg/L	37
25-49.99 mg/L	52
50-74.99 mg/L	80
75-99.99 mg/L	107
100-124.99 mg/L	132
125-149.99 mg/L	157
150-174.99 mg/L	181
175-199.99 mg/L	204
200-224.99 mg/L	227
225-249.99 mg/L	249
250+ mg/L	260

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart AB – Sector AB – Transportation Equipment, Industrial or Commercial Machinery Facilities

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.AB.1 Stormwater Discharges

The requirements in Subpart AB apply to stormwater discharges associated with industrial activity from Transportation Equipment, Industrial or Commercial Machinery facilities as identified by the SIC Codes specified under Sector AB in Table D-1 of Appendix D of the permit.

8.AB.2 Additional SWPPP Requirements

8.AB.2.1 ***Drainage Area Site Map.*** (See also Part 6.2.2) Identify in your SWPPP where any of the following may be exposed to precipitation or stormwater: vents and stacks from metal processing and similar operations.

8.AB.3 Indicator Monitoring (See also Part 4.2.1)

Table 8.AB-1 identifies indicator monitoring that applies to the specific subsectors of Sector AB. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.AB-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector AB (Subsector AB1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector AB1. Industrial and Commercial Machinery, Except Computer and Office Equipment (see Sector AC) (SIC Code 3511-3599 (except 3571-3579)); Transportation Equipment Except Ship and Boat Building and Repairing (see Sector R) (SIC Code 3711-3799 (except 3731, 3732))	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart AC – Sector AC – Electronic and Electrical Equipment and Components, Photographic and Optical Goods

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.AC.1 Covered Stormwater Discharges

The requirements in Subpart AC apply to stormwater discharges associated with industrial activity from facilities that manufacture Electronic and Electrical Equipment and Components, Photographic and Optical goods as identified by the SIC Codes specified in Table D-1 of Appendix D of the permit.

8.AC.2 Additional Requirements

No additional sector-specific requirements apply.

8.AC.3 Indicator Monitoring (See also Part 4.2.1)

Table 8.AC-1 identifies indicator monitoring that applies to the specific subsectors of Sector AC. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.AC-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector AC (Subsector AC1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector AC1. Computer and Office Equipment (SIC Code 3571-3579); Measuring, Analyzing, and Controlling Instruments; Photographic and Optical Goods, Watches, and Clocks (SIC Code 3812-3873); Electronic and Electrical Equipment and Components, Except Computer Equipment (SIC Code 3612-3699)	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Part 8 – Sector-Specific Requirements for Industrial Activity

Subpart AD – Sector AD – Stormwater Discharges Designated by the Director as Requiring Permits

You must comply with Part 8 sector-specific requirements associated with your primary industrial activity and any co-located industrial activities, as defined in Appendix A. The sector- specific requirements apply to those areas of your facility where those sector-specific activities occur. These sector-specific requirements are in addition to any requirements specified elsewhere in this permit.

8.AD.1 Covered Stormwater Discharges

Sector AD is used to provide permit coverage for facilities designated by the Director as needing a stormwater permit, and any discharges of stormwater associated with industrial activity that do not meet the description of an industrial activity covered by Sectors A-AC.

8.AD.1.1 Eligibility for Permit Coverage. Because this sector is primarily intended for use by discharges designated by the Director as needing a stormwater permit (which is an atypical circumstance), and your facility may or may not normally be discharging stormwater associated with industrial activity, you must obtain the Director's written permission to use this permit prior to submitting an NOI. If you are authorized to use this permit, you will still be required to ensure that your discharges meet the basic eligibility provisions of this permit at Part 1.1.

8.AD.2 Sector-Specific Benchmarks and Effluent Limits. (See also Part 4)

The Director will establish any additional monitoring and reporting requirements for your facility prior to authorizing you to be covered by this permit. Additional monitoring requirements would be based on the nature of activities at your facility and your stormwater discharges.

8.AD.3 Indicator Monitoring (See also Part 4.2.1)

Table 8.AD-1 identifies indicator monitoring that applies to the specific subsectors of Sector AD. This indicator monitoring applies to both your primary industrial activity and any co-located industrial activities.

Table 8.AD-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Indicator Monitoring Parameter	Indicator Monitoring Threshold
Applies to all Sector AD (Subsectors AD1) facilities with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit	Polycyclic Aromatic Hydrocarbons (PAHs)*	Report Only/ No thresholds or baseline values
Subsector AD1. Other stormwater discharges designated by the Director as needing a permit (see 40 CFR 122.26(a)(9)(i)(C) & (D)) or any facility discharging stormwater associated with industrial activity not described by any of Sectors A-AC. NOTE: Facilities may not elect to be covered under Sector AD. Only the Director may assign a facility to Sector AD.	Chemical Oxygen Demand (COD)	Report Only/ No thresholds or baseline values
	Total Suspended Solids (TSS)	Report Only/ No thresholds or baseline values
	pH	Report Only/ No thresholds or baseline values

* Monitoring is required for the 16 individual PAHs identified at Appendix A to 40 CFR Part 423: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

9 Permit Conditions Applicable to Specific States, Indian Country Lands, or Territories

Section 401 of the CWA (see also 40 CFR §122.44(d)(3) and §124.53(a)) provides that no federal license or permit, including NPDES permits, to conduct any activity that may result in any discharge to waters of the United States shall be granted until the state/tribe in which the discharge originates certifies that the discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the CWA. The requirements under this Part of the permit provide state, U.S. territory, and tribal requirements that these entities certify are necessary in order for the permit to comply with applicable water quality requirements.

The conditions below have been incorporated into the 2021 MSGP based on the certifications granted for the 2021 MSGP. These conditions apply for activities conducted under this permit that occur within the jurisdiction that established the condition. Any references below to the "2020 MSGP," "MSGP 2020," "2020 proposed MSGP," "proposed permit," or similar refer to the final 2021 MSGP.

9.1 EPA Region 1: Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont

9.1.1 CTR05I000: Indian Country within the State of Connecticut

No additional requirements.

9.1.2 MAR050000: Commonwealth of Massachusetts, except Indian country

Operators in the Commonwealth of Massachusetts must meet the following conditions (see certification provided by the Commonwealth of Massachusetts, CWA401Cert_MA_2021 MSGP):

9.1.2.1 *Additional conditions required by the Commonwealth of Massachusetts.*

Discharges covered by the general permit must comply with the provisions of 314 CMR 3.00, 314 CMR 4.00, 314 CMR 9.00, and 310 CMR 10.00. New facilities or redevelopment of existing facilities subject to this permit must comply with applicable stormwater performance standards prescribed by state regulation. A permit under 314 CMR 3.04 is not required for existing facilities that meet state stormwater performance standards. An application for a permit under 314 CMR 3.00 is required only when required under 314 CMR 3.04(2)(b) (designation of a discharge on a case-by-case basis) or is otherwise identified in 314 CMR 3.00 as a discharge requiring a permit application. See *id.* at 1-2.

9.1.2.2 *SWPPP Availability.*

MassDEP may request a copy of the Stormwater Pollution Prevention Plan (SWPPP) at any time, and the permittee is required to submit the SWPPP to MassDEP within 14 days of such a request. MassDEP may conduct an inspection of any facility covered by this permit to ensure compliance with state law requirements, including state water quality standards. MassDEP may enforce its certification conditions. See *id.*

9.1.2.3 *New Dischargers.*

For new dischargers applying to be covered under the MSGP and proposing to discharge to Outstanding Resource Waters as identified in 314 CMR 4.00, MassDEP will require applicants to submit a copy of the Stormwater Pollution Prevention Plan (SWPPP) for review. For purposes of this review the applicant is required to submit a copy of the EPA NOI and SWPPP to MassDEP at the same time they are submitted to EPA. Instructions on how to submit these documents to MassDEP can be found here: https://www.mass.gov/how-to/wm-15-npdes-general-permit-notice-of-intent. See *id.*

9.1.2.4 *Submission of Monitoring Data.*

The results of any monitoring required by this permit that identify violations of any effluent limits or benchmarks for any parameter for which monitoring is required shall be sent to the appropriate Regional Office of MassDEP (attention: Bureau of Air and Waste). In addition, any follow-up monitoring and a description of the corrective actions required and undertaken to meet the effluent limits or benchmarks shall be sent to the appropriate MassDEP Regional Office. See *id.*

9.1.2.5 *Sector-Specific Requirements.*

The Massachusetts Coastal Zone Management Program submitted the following conditions to be included in the WQC for the 2015 permit in order to meet the Program's Consistency Review, and to remain consistent, these same requirements are included in this WQC:

a. In Sector Q [Water Transportation] add copper to the required monitoring parameters with a benchmark monitoring concentration as is included in the MSGP 2020 Table 1 of Appendix J.

b. In Sector R [Ship and Boat Building and Repair Yards] add aluminum, lead, and copper to the list of required monitoring parameters with a benchmark monitoring concentration as included in the MSGP 2020 Table 1 of Appendix J.

c. Modify the monitoring requirements for Sectors Q and R such that all four of the quarterly monitoring samples must meet the benchmarks rather than the average of the four before no further monitoring is required. See *id.* at 2.

9.1.3 MAR05I000: Indian country within the Commonwealth of Massachusetts

No additional requirements.

9.1.4 NHR050000: State of New Hampshire

Operators in New Hampshire must also meet the following conditions (see certification provided by the State of New Hampshire, CWA410Cert_NH_2021 MSGP):

9.1.4.1 *Consider Opportunities for on-site infiltration of stormwater.*

In Part 2.1.1 Control Measure Selection and Design Considerations, you are required to consider opportunities for infiltrating runoff onsite. This is encouraged, but it should only be done if consistent with the statutes and rules of the Department of Environmental Services written to protect groundwater. Infiltration best management practices are not recommended at industrial sites except in areas where industrial activities do not occur, such as at office buildings and their associated parking facilities, or in drainage areas at the facility where a certification of no exposure will always be possible [see 40CFR122.26(g)]. Other justifiable reasons for not using on-site infiltration BMP include the following:

a. The facility is located in a wellhead protection area as defined in RSA 485-C:2; or

b. The facility is located in an area where groundwater has been reclassified to GAA, GA1 or GA2 pursuant to RSA 485-C and Env-Dw 901; and

c. Any areas that would be exempt from the groundwater recharge requirements contained in Env-Wq 402, Groundwater Discharge Permit and Registration Rules (formerly Env-Ws1500), including all land uses or activities considered to be a "High-load site." See *id.at 1-5*

9.1.4.2 *Maintenance of Infiltration Best Management Practices.*

In Part 2.1.2.3 you are required to maintain control measures. In Parts 6.2.2, 6.2.5.1 and 6.5 you are required to document the location of control measures, perform

inspections and maintenance, and keep records. Accordingly, the SWPPP must contain the following:

a. A description of and the location of each on-site infiltration BMP installed;

b. The maintenance procedures that will be followed to ensure proper operation, including the removal of sediment from pretreatment devices;

c. The inspection procedures that will be followed at least annually. These should include the procedures for ensuring that the stormwater being infiltrated is not exposed to industrial pollutants and the procedures for ensuring proper drainage to prevent mosquito breeding;

d. The employee name (or title of the position) who is a member of the stormwater pollution prevention team (see Part 6.2.1) who will be responsible for the maintenance required in Part 9.1.4.2.b, the inspection required in Part 9.1.4.c and any necessary corrective actions or additional implementation measures required in Part 5; and

e. Records for all maintenance performed, inspections conducted, and corrective actions taken. See *id.*

9.1.4.3 *Discontinue, Permit or Register On-site Infiltration BMP if Necessary.*

If at any time a certification of no exposure can no longer be made for any of the stormwater to be infiltrated, then the infiltration BMP must cease for that portion of the runoff or the discharge must be permitted or registered as appropriate. The following may be required:

a. Infiltration BMP that meet the definition of a Class V well or that infiltrates stormwater via a subsurface structure (i.e. concrete chambers, dry well, leach field, etcetera) will need an underground injection control (UIC) registration from NHDES; and

b. Permitting as a groundwater discharge as required in Env-Wq 402, if the stormwater will or may contain regulated contaminants.

The SWPPP must be modified immediately if new infiltration BMP are proposed or if existing infiltration BMP will cease. See *id.*

9.1.4.4 *Required NHDES notification.*

a. Notify the NHDES Groundwater Discharge Permit Coordinator immediately if you believe that any infiltration BMP may need to be permitted or registered (see Part 9.1.4.3) during the permit term.

b. Notify the NHDES Wastewater Engineering Bureau immediately of any plans to discharge any new non-stormwater discharges during the permit term. This does not include the allowable non-stormwater discharges listed in Part 1.1.3

c. Immediately notify the NHDES Drinking Water and Groundwater Bureau at (603) 271-2513 of reportable releases (e.g., spills) of extremely hazardous, hazardous substance or oil as defined in accordance with the Emergency Planning and Community Right-to-Know Act (EPCRA) that are discharged into a source of drinking water or within a source protection area. This is in addition to immediately contacting local and state emergency responders through calling 911 and (603) 271-3899 during business hours and the state police at 800 525-5555 after hours or on weekends. See *id.*

9.1.4.5 *Information That May Be Requested by NHDES.*

To ensure compliance with RSA 485-C, RSA 485-A, RSA 485-A:13, I(a), Env-Wq 400 and Env-Wq 401 the following information may be requested by NHDES. This information

must be kept on site unless you receive a written request from NHDES that it be sent to the address shown in Part 9.1.4.6.

a. The site map required in Part 6.2.2, showing the type and location of all on-site infiltration BMP utilized at the facility or the reason(s) why none were installed.

b. A list of all non-stormwater discharges that occur at the facility, including their source locations and the control measures being used (see Parts 1.2.2 and 6.2.3.4).

c. A copy of the Annual Reports required in Part 7.4. See *id.*

9.1.4.6 *Where to Submit Information.*

Information submitted to NHDES must be sent to the following address:

NH Department of Environmental Services
Wastewater Engineering Bureau
Permits & Compliance Section
P.O. Box 95
Concord, NH 03302-0095

9.1.4.7 *Modification of Clean Water Act Section 401 Water Quality Certification.*

When NHDES determines that additional water quality certification requirements are necessary to the protect water quality, it may require individual dischargers to meet additional conditions to obtain or continue coverage under the MSGP. Any such conditions shall be supplied to the permittee in writing. Any required pollutant loading analyses and any designs for structural best management practices necessary to protect water quality must be prepared by a professional engineer (civil or sanitary) licensed in New Hampshire. See *id.*

9.1.5 RIR05I000: Indian country within the State of Rhode Island

No additional requirements.

9.1.6 VTR05F000: Areas in the State of Vermont subject to industrial activity by a Federal Operator

No additional requirements.

9.2 EPA Region 2: New Jersey, New York, Puerto Rico, Virgin Islands

9.2.1 PRR050000: Commonwealth of Puerto Rico

No additional requirements.

9.2.2 NYR051000: Indian country within the State of New York, except the lands of the St. Regis Mohawk Tribe

No additional requirements.

9.3 EPA Region 3: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia.

9.3.1 DCR050000: District of Columbia

Operators in the District of Columbia must also meet the following conditions (see certification provided by the District of Columbia, CWA410Cert_DC_2021 MSGP):

9.3.1.1 *Compliance with District of Columbia Laws and Regulations.*

Discharges covered by the MSGP must comply with the District of Columbia Water Pollution Control Act of 1984, as amended, D.C. Official Code § 8-103.01 et seq.; and its implementing regulations in Title 21 Chapters 11 and 19 of the District of Columbia Municipal Regulations. See *id.* at 1-3

9.3.1.2 *No Preclusion of Responsibilities.*

Nothing in this permit will be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to District of Columbia laws and regulations. See *id.*

9.3.1.3 *Additional Reporting.*

The permittee shall report to the Associate Director, Inspection and Enforcement Division any noncompliance which may endanger health or the environment. All information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. See *id.*

9.3.2 DER05F000: Areas in the State of Delaware subject to industrial activity by a Federal Operator

No additional requirements.

9.4 EPA Region 4: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee

9.4.1 ALR05I000: Indian country within the State of Alabama

No additional requirements.

9.4.2 FLRORI000: Indian country within the State of Florida

9.4.2.1 Miccosukee Tribe of Indians

Industrial stormwater discharges on the Miccosukee Tribe lands are not eligible for permit coverage under this permit. Contact the EPA Region 4 office for additional information, including available permits.

9.4.2.2 Seminole Tribe of Florida

Industrial stormwater discharges on the Seminole Tribe lands are not eligible for permit coverage under this permit. Contact the EPA Region 4 office for additional information, including available permits.

9.4.3 MSR05I000: Indian country within the State of Mississippi

No additional requirements.

9.4.4 NCR05I000: Indian country within the State of North Carolina

No additional requirements.

9.4.5 SCR05I000: Indian country within the State of South Carolina

No additional requirements.

9.5 EPA Region 5: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin.

9.5.1 MIR05I000: Indian country within the State of Michigan

No additional requirements.

9.5.2 MNR05I000: Indian country within the State of Minnesota

9.5.2.1 *Fond du Lac Reservation*

Operators in the Fond du Lac Reservation must also meet the following conditions (see certification provided by the Fond du Lac Reservation, CWA410Cert_Fond du Lac_2021 MSGP):

9.5.2.1.1 *Submission of SWPPP.*

A copy of the Storm Water Pollution Prevention Plan (SWPPP) must be submitted to the Office of Water Protection at least fifteen (15) days in advance of sending the

Notice of Intent to EPA. The SWPPP can be submitted electronically to richardgitar@FDLREZ.com or by hardcopy sent to:

Fond du Lac Reservation
Office of Water Protection
1720 Big Lake Road
Cloquct, MN 55720

MSGP applicants are encouraged to work with the FDL Office of Water Protection in the identification of all proposed receiving waters and selection of appropriate Best Management Practices (BMPs). See *id.* at 2-4.

9.5.2.1.2 *Submission of NOI and NOT.*

Copies of the Notice of Intent (NOI) and the Notice of Termination (NOT) must be sent to the Fond du Lac Office of Water Protection at the same time they are submitted to EPA. See *id.*

9.5.2.1.3 *Benchmark Monitoring for Turbidity.*

The Benchmark Monitoring Concentration (BMC) for Turbidity shall NOT exceed 10% of natural background as determined by the Office of Water Protection staff as measured in NTU. See *id.*

9.5.2.1.4 *Effluent Limitations.*

The Effluent Limitations for ALL sectors shall NOT exceed more than two times (2x) Fond du Lac's ambient concentrations (based upon more than 20 years of monitoring data) for the following (See *id.*):

a)	Ammonia	Ambient =<0.3mg/l
b)	Arsenic	Ambien =< 3.0 µg/l
c)	Chromium	Ambient =< 0.8 µg/l
d)	Total Phosphorus	Ambient =< 0.09 mg/l
e)	Total Suspended Solids	Ambient =< 16 mg/l
f)	Zinc	Ambient =< 24 mg/l

9.5.2.1.5 *Water Quality Criteria.*

All industrial activities shall be carried out in such a manner as will prevent violations of water quality criteria as stated in the Water Quality Standards of the Fond du Lac Reservation, Ordinance 12/98, as amended. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of water of the Fond du Lac Reservation for any of the uses designated in the Water Quality Standards of the Fond du Lac Reservation. These uses include wildlife, aquatic life, warm water fisheries, cold water fisheries, subsistence fishing (netting), primary contact recreation, secondary contact recreation, cultural, wild rice areas, aesthetic waters, agriculture, navigation, and commercial. See *id.*

9.5.2.1.6 *Impacts to cultural sites.*

This certification does not authorize impacts to cultural, historical, or archeological features or sites, or properties that may be eligible for such listing. See *id.*

9.5.2.2 ***Grand Portage Band of the Minnesota Chippewa Tribe***

The following conditions apply to industrial storm water discharges into Waters of the Grand Portage Reservation (see certification provided by the Grand Portage Reservation, CWA410Cert_Fond du Lac_2021 MSGP):

9.5.2.2.1 *Definitions.*

The definitions set forth in the Grand Portage Water Resources Ordinance, as amended, ("Water Resources Ordinance") govern these certification conditions. See id. at 1,4.

9.5.2.2.2 *Water Quality Standards.*

All industrial storm water discharges authorized by this permit must comply with the Grand Portage Water Quality Standards, Applicable Federal Standards, and the Water Resources Ordinance. See id.

9.5.2.2.3 *Additional Monitoring.*

Grand Portage reserves the right to require additional monitoring of storm water discharges as determined on a case-by-case basis. If the Board determines that additional monitoring is necessary, the monitoring plan must be supplemented and incorporated into the Storm Water Pollution Prevention Plan ("SWPPP") before the SWPPP is submitted to the USEPA. Accordingly, the Board must be contacted, at the address listed below, at the onset of writing the SWPPP. See id. at 1,4.

9.5.2.2.4 *Submission of SWPPP, NOI, and NOT.*

In addition, a copy of the SWPPP, Notice of Intent ("NOI"), and Notice of Termination (NOT) (collectively the "application") must be submitted to the Board at least 30 days before submitting the NOI to USEPA. Applications should be sent to the following address:

Grand Portage Environmental Resources Board
P.O. Box 428
Grand Portage, MN 55605

9.5.2.2.5 *Additional information.*

Upon receipt of the application, the Board shall order the Grand Portage Environmental Department (Department) to conduct a technical review of the application materials. If necessary, Department staff will send a request for additional information to the applicant within 30 days of receipt of the application. See *id.* at 1,5.

9.5.2.2.6 *Preliminary coverage determination.*

After considering the application and such other information and data as the Department staff deems relevant, the Department Director will evaluate whether there is a reasonable probability that the proposed activity will violate the Grand Portage Water Quality Standards or any Applicable Federal Standards and recommend one of the following preliminary determinations:

(a) Unconditionally grant coverage under the MSGP;

(b) Grant coverage under the MSGP subject to certain conditions; or

(c) Deny coverage under the MSGP.

9.5.2.2.7 *Final coverage determination.*

Within 30 days of the Department Director's recommendation, the Board will provide public notice of the application for coverage under the MSGP and the Department Director's recommendations. Upon request, the Department will

schedule a hearing as provided in 40 CFR Part 25. If, after considering the evidence provided at the hearing and the entire record, the Board determines by a preponderance of the evidence that the proposed activity will violate the Grand Portage Water Quality Standards or any Applicable Federal Standards, the Board shall deny eligibility for coverage under the MSGP, unless there is a reasonable certainty that compliance can be achieved by the applicant's adherence to reasonable conditions. If the Board finds insufficient evidence to show that the proposed activity will violate the Grand Portage Water Quality Standards or any Applicable Federal Standards, it shall approve coverage under the MSGP. See *id.*

9.5.2.2.8 *Appeals.*

Appeals related to water quality certification decisions or permits will be heard by the Grand Portage Tribal Court. See *id.*

9.5.2.2.9 *Prohibition of Discharge.*

The applicant is prohibited from discharging into the Waters of the Reservation pursuant to the MSGP unless the Board has granted coverage under the MSGP, or until the applicant has adhered to conditions required by the Board's conditional grant of coverage. See *id.*

9.5.2.2.10 *Compliance.*

The Board retains full authority provided by the Water Resources Ordinance to ensure compliance with and enforce the provisions of the Water Resource Ordinance, the Grand Portage Water Quality Standards, Applicable Federal Standards, and these certification conditions." See *id.*

9.5.3 WIR05I000: Indian country within the State of Wisconsin, except those on Bad River Band of Lake Superior Tribe of Chippewa Indians lands and on Sokaogon Chippewa Community lands

No additional requirements.

9.6 EPA Region 6: Arkansas, Louisiana, Oklahoma, Texas, and New Mexico (except see Region 9 for Navajo lands, and see Region 8 for Ute Mountain Reservation lands).

9.6.1 LAR05I000: Indian country within the State of Louisiana

No additional requirements.

9.6.2 NMR050000: The State of New Mexico, except Indian country

Operators in New Mexico must also meet the following conditions (see certification provided by the State of New Mexico, CWA410Cert_NM_2021 MSGP):

9.6.2.1 *PFAS Analytes Monitoring.*

Except as specified below, all NAICS codes listed in the December 4, 2019 Advanced Notice of Proposed Rulemaking for TRI Reporting[1] and covered under this MSGP shall monitor and report PFAS in effluent once during the first year of MSGP coverage, or when the facility discharges if no discharge occurs during the first year. Samples shall be analyzed by an accredited lab for all 18 PFAS analytes using EPA Method 537.1 (EPA 2018), and the DoD Quality Systems Manual Method 5.3 (2019) as guidance. Method and analysis shall be sufficiently sensitive to evaluate the New Mexico screening level for PFOA and PFOS.

The PFAS screening level in New Mexico is indicated below. The screening level is not a standard of quality and purity for the surface waters of New Mexico but

[1] https://www.federalregister.gov/documents/2019/12/04/2019-26034/addition-of-certain-per--and-polyfluoroalkyl-substances-community-right-to-know-toxic-chemical

allows detection and further evaluation of the existence of PFAS in stormwater discharges to determine if more attention is warranted.

PFAS Screening Level for New Mexico*	
PFOA + PFOS	0.070 µg/L

*Concentrations of PFOA and PFOS are summed before being compared to the screening level.

If PFOA and/or PFOS are detected above the New Mexico screening level, additional monitoring and reporting shall occur annually and in accordance with the same parameters and methods as required for the first sampling event. In addition, the permittee should take corrective action and identify ways to minimize, reduce, and eliminate PFAS from the industrial activity through product substitution and/or additional best management practices and operational controls. Results of past monitoring and any corrective actions taken should be included in the Stormwater Pollution Prevention Plan (SWPPP).

The permittee shall submit monitoring results for all 18 PFAS analytes under EPA Method 537.1, as required, to NMED at the following address:

Point Source Program Manager
Surface Water Quality Bureau
New Mexico Environment Department
P.O. Box 5469
Santa Fe, NM 87502-5469

NMED may suspend the requirement to monitor and report PFAS under the following circumstances:

- If the permittee determines it is not technically practicable to measure PFAS in their stormwater discharge; or
- If additional sampling determines that it is unlikely that PFAS exist in a permittee's stormwater discharge, if the permittee provides facility data that demonstrate PFAS are unlikely to be present in the stormwater discharge, or there are no available, accredited laboratories capable of performing the required PFAS analysis; or
- If additional sampling demonstrates that the pollutant concentration is lower than the screening level or the permittee is subject to duplicative or more stringent PFAS requirements.

However, to be exempted for these reasons, the permittee must submit documentation to NMED for approval. See *id.* At 4-6.

9.6.2.2 *Benchmark Monitoring Concentrations*

The benchmark values for pollutants must be modified to reflect New Mexico WQS for the facilities in New Mexico based on water quality criteria approved in the Standards for Interstate and Intrastate Surface Waters, 20.6.4.900 NMAC. Consistent with the language in this permit, exceedances of a benchmark value, even if that value is based on New Mexico WQS, are not immediately a violation of the permit unless the permittee does not take appropriate action to improve best management practices or otherwise mitigate the discharge of the detected pollutant. A full Tier 2 Antidegradation Review (significant degradation analysis; reasonable alternatives identification; economic and social importance; etc.) does not translate to projects covered under this general permit. Therefore, this condition is necessary to ensure that New Mexico's antidegradation policy is upheld and surface waters of the state are protected from degradation. See *id.*

The following tables lay out the benchmark values that should be used for sector-specific monitoring in the MSGP.

MSGP Benchmark Values and Sources		
Most restrictive value (highlighted below) must be chosen		
Pollutant	**2020 proposed MSGP Benchmark**	**New Mexico MSGP Benchmark**
Total Recoverable Beryllium	130 µg/L	
Biochemical Oxygen Demand (5-day)	30 mg/L	
pH	6.0 – 9.0 s.u.	6.6 – 9.0 s.u.
Chemical Oxygen Demand	120 mg/L	
Total Phosphorus	2.0 mg/L	
Total Suspended Solids (TSS)	100 mg/L	
Ammonia	2.14 mg/L	
Nitrate and Nitrite Nitrogen	0.68 mg/L	
Turbidity	50 NTU	
Total Recoverable Antimony	640 µg/L	640 µg/L (dissolved)
Total Recoverable Arsenic	150 µg/L	9 µg/L (dissolved)
Total Recoverable Cadmium	1.8 µg/L	See below
Chromium (III)	570 µg/L	See below
Chromium (VI)	16 µg/L	16 µg/L (dissolved)
Total Recoverable Copper	14 µg/L	See below
Total Recoverable Cyanide	22 µg/L	5.2 µg/L
Total Recoverable Lead	8.2 µg/L	14 µg/L (dissolved)
Total Recoverable Mercury	1.4 µg/L	0.77 µg/L
Total Recoverable Nickel	47 µg/L	See below
Total Recoverable Selenium	5 µg/L	5 µg/L
Total Recoverable Silver	3.8 µg/L	See below
Total Recoverable Zinc	120 µg/L	See below

	Hardness dependent criteria - Dissolved (µg/L)						
Concurrent Hardness as $CaCO_3$, dissolved (mg/L)	**Cd**	**Cr III**	**Cu**	**Pb**	**Ni**	**Ag**	**Zn**
25	0.51	180	4	14	140	0.3	45
30	0.59	210	4	17	170	0.4	54
40	0.76	270	6	24	220	0.7	70

50	0.91	320	7	30	260	1.0	85
60	1.07	370	8	37	300	1.3	101
70	1.22	430	10	44	350	1.7	116
80	1.37	470	11	51	390	2.2	131
90	1.51	520	12	58	430	2.7	145
100	1.65	570	13	65	470	3.2	160
200	2.98	1,010	26	140	840	11	301
220	3.23	1,087	28	151	912	13	328
300	4.21	1,400	38	210	1190	21	435
400 and above	5.38	1,770	50	280	1510	35	564

9.6.2.3 *Outstanding National Resource Waters.*

Operators are not eligible to obtain authorization under this permit for stormwater discharges to outstanding national resource waters (ONRWs, also referred to as "Tier 3" waters). Although State WQS provide for temporary and short-term degradation of water quality in an ONRW under very limited circumstances, if approved by the New Mexico Water Quality Control Commission as specified at 20.6.4.8.A NMAC, the approval process required for these activities does not translate to projects covered under this general permit. This condition is necessary to ensure that no degradation is allowed in ONRWs by requiring proposed stormwater discharges to be reviewed under the individual permit process. Tier 3 waters are defined in Appendix F of the proposed permit. See *id.*

9.6.2.4 *Additional SWPPP Requirements.*

Information on how the permittee knows the groundwater or spring water is uncontaminated must be documented in the facility SWPPP.

EPA must amend the NOI to include a question for the permittee to indicate whether they anticipate to discharge groundwater or spring water from their site. The permittee must be able to indicate on the NOI: flow rate, whether the ground or spring water source is nearby potential pollutant sources, and if the ground or spring water has been tested and is not contaminated by the potential pollutant source.

If discharge of groundwater or spring water is anticipated at a facility, permittees must complete the following steps to determine if it is potentially contaminated:

a. Indicate on the NOI that dewatering activities are anticipated. Provide information on flow and potential to encounter impacted ground or spring water.

b. Refer to the Mapper tool at https://gis.web.env.nm.gov/oem and check if the following groundwater pollutant sources are located nearby the anticipated source of groundwater or spring water such that there is a potential for contamination:

Project Location Relative to a Source of Potential Groundwater Contamination	**Constituents likely to be required for testing**
Within 0.5 mile of an open Leaking Tank site	BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions.

Within 0.5 mile of an open Voluntary Remediation site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)
Within 0.5 mile of an open RCRA Corrective Action Site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)
Within 0.5 mile of an open Abatement Site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)
Within 0.5 mile of an open Brownfield Site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)
Within 1.0 mile of a Superfund site with associated groundwater contamination.	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)
EPA approved-sufficiently sensitive methods must be used – approved methods are listed in 40 C.F.R. 136.3.	

c. If within the distances listed above, Permittee must provide test data indicating the quality of the groundwater or spring water to be discharged according to the table above.

d. Permittee must send test result data to EPA Region 6 and the NMED Surface Water Quality Bureau. If the test data exceed State WQS, the ground or spring water cannot be discharged from the facility into surface waters under this permit. Discharge to surface waters must be conducted under a separate NPDES individual permit to ensure proper treatment and disposal. If disposal will be to the ground surface or in an unlined pond, the permittee must submit a Notice of Intent to Discharge (NOI) to the NMED Ground Water Quality Bureau. For further assistance determining whether your facility may encounter impacted groundwater, the permittee may contact the NMED Ground Water Quality Bureau at (505) 827-2965.

e. Investigative information and data demonstrating that water is not contaminated must be documented in the facility SWPPP. See *id.*

9.6.2.5 *Ponds and Other Impoundments.*

Per the New Mexico Office of the State Engineer requirements[2], impoundments must drain or infiltrate within 96 hours. The facility must transfer a valid water right to impound and retain the stormwater longer than 96 hours or request a variance from the State Engineer.

If the facility intends to discharge stormwater that contains a "water contaminant" as defined in 20.6.2.7 NMAC, a State of New Mexico Notice of Intent to Discharge must

[2] 19.26.2.15.B NMAC PONDS AND OTHER IMPOUNDMENTS: A permit is required to capture or store surface water in an impoundment. An application to capture and store surface water shall be filed pursuant to 19.26.2.10 NMAC or 19.26.2.11 NMAC unless the impoundment of water is authorized as a livestock watering impoundment under 19.26.2.14 NMAC.

B. Flood control: No permit to appropriate water is required for an impoundment when the primary purpose of the impoundment is flood control, provided the outlet drains the impoundment (from the spillway crest) in 96 hours. The water shall not be detained in the impoundment in excess of 96 hours unless the state engineer has issued a waiver to the owner of the impoundment.

be submitted to NMED in accordance with 20.6.2.1201 NMAC **prior to discharge**. This includes infiltration of stormwater or a discharge to the ground surface that may move directly or indirectly into groundwater.

In the event impounded stormwater contains a "water contaminant" as defined in 20.6.2.7 NMAC, the stormwater must meet benchmark values in order to be discharged to a surface water of the State. See *id.*

9.6.3 NMR05I000: Indian country within the State of New Mexico, except Ute Mountain Reservation lands that are covered under Colorado permit COR05I000 and Navajo Reservation lands that are covered under Arizona permit AZR05I000

9.6.3.1 Ohkay Owingeh

Permittees in the tribe of Ohkay Owingeh must also meet the following conditions (see certification provided by the Tribe of Ohkay Owingeh, CWA410Cert_Ohkay Owingeh_2021 MSGP)**:**

9.6.3.1.1 *Submission of NOI and NOT.*

The operator(s) must provide a copy of the Notice of Intent (NOI) to the Ohkay Owingeh Office of Environmental Affairs the same day electronic confirmation is received from the U.S. Environmental Protection Agency (EPA) that the submitted NOI was certified and is undergoing its 30-day review period . Additionally, a copy of the Notice of Termination (NOT) must be provided the same day electronic confirmation is received from the EPA that the NOT has been accepted. The NOI and NOT should be provided to the address below. See *id.* at 1-2.

9.6.3.1.2 *Where to Submit Information.*

Ron Lovato, Governor
P.O. Box 1099
Ohkay Owingeh, NM 87566

governor@ohkay .org

Naomi L. Archuleta
Environmental Programs Manager
Office of Environmental Affairs, NRD Division
P.O. Box 717
Ohkay Owingeh, NM 87566

naomi.archuleta@ohkay.org

9.6.3.1.3 *SWPPP Availability.*

The operator(s) must provide an electronic copy of the Storm Water Pollution Prevention Plan(s) to the Office of Environmental Affairs by email to naomi.archuleta@ohkay.org at least 30 days prior to submitting the NOI to EPA and Ohkay Owingeh. See *id.*

9.6.3.2 *Pueblo of Isleta*

Permittees in the Pueblo of Isleta must also meet the following conditions (see certification provided by the Pueblo of Isleta, CWA410Cert_Pueblo of Isleta_2021 MSGP)**:**

9.6.3.2.1 *Water Quality Standards.*

Impacts to waters of the Pueblo of Isleta are prohibited. All lakes, rivers, streams, ditches, springs and wetlands shall be fully protected. See *id.* at 1-2.

9.6.3.2.2 *Submission of NOI.*

All discharges made pursuant to the MSGP shall be conducted in conformance with the requirements of Permit No. NMR05000, and in such a manner as will prevent violations of the Pueblo's Surface Water Quality Standards. See *id.*

9.6.3.2.3 *Submission of NOI.*

The operator(s) must provide a copy of the Notice of Intent ("NOI") to the Governor and Water Quality Control Officer the same day electronic confirmation is received by the EPA that the submitted NOI was certified and is undergoing its 30-day review period. See *id.* Additionally, a copy of the Notice of Termination ("NOT") must be provided the same day electronic confirmation is received from the EPA that the NOT has been accepted. A paper copy of the NOI and NOT should be provided to the Governor; electronic copy or URL is acceptable for submittal to the Pueblo of Isleta Water Quality Control Officer:

Governor Pueblo of Isleta
PO Box 1270
Isleta NM 87022

Water Quality Control Officer Pueblo of Isleta
Environment Department PO Box 1270
Isleta NM 87022
Ramona.Montoya @isletapueblo.com

9.6.3.2.4 *SWPPP Availability.*

The operator(s) must provide an electronic copy of its Storm Water Pollution Prevention Plan(s) ("SWPP") to the Pueblo of Isleta Environment Department by email to Ramona.Montoya@isletapueblo.com at least 30 days p1ior to submitting the NOI to EPA and the Pueblo. The Pueblo may use the EPA 30-day waiting period to determine whether any additional measures are necessary to meet applicable Tribal surface water quality standards or to comply with Tribal antidegradation requirements. See *id.*

9.6.3.3 **Pueblo of Laguna**

The following condition applies only to discharges on the Santa Ana Indian Pueblo (see certification provided by the Pueblo of Isleta, CWA410Cert_Pueblo of Laguna_2021 MSGP):

9.6.3.3.1 *Submission of NOI.*

The operator(s) must provide a copy of the Notice of Intent (NOI) to the Pueblo of Laguna's Environmental & Natural Resources Department the same day electronic confirmation is received from the U.S. Environmental Protection Agency (EPA) that the submitted NOI was certified and is undergoing its 30-day review period. Additionally, a copy of the Notice of Termination (NOT) must be provided the same day electronic confirmation is received from the EPA that the NOT has been accepted. See *id.* 1-2.

The NOI and NOT should be provided to the following address:

Pueblo of Laguna, Office of the Governor
Attn: Environmental & Natural Resources Department
P.O. Box 194 Laguna, NM 87026
Email: setter@pol-nsn.gov, cc: gjojola@pol-nsn.gov, ewoodward@pol-nsn.gov

9.6.3.3.2 *SWPPP Availability.*

The operator(s) must provide an electronic copy of the Storm Water Pollution Prevention Plan(s) to Pueblo of Laguna Environmental Program at the same time the NOI is submitted to the listed email addresses above. See *id.*

9.6.3.3.3 *Additional Correspondence.*

The Pueblo of Laguna Environmental Program shall be included on any correspondences between the applicant and the EPA related to analytical data, written reports, corrective action, enforcement, monitoring, or incident reports. See *id.*

9.6.3.3.4 *Additional Consultation.*

Immediate initiation of consultation with the Pueblo of Laguna is required should any human remains or artifacts be unearthed that fall under the Native American Graves Protection and Repatriation Act guidelines during the span of the project. If human remains are unearthed, contact the Pueblo of Laguna Police Department at 505-552-6666. If artifacts are unearthed, contact the Pueblo of Laguna Tribal Historic Preservation Office at 505-552-5033. See *id.*

9.6.3.4 Pueblo of Santa Ana

The following condition applies only to discharges on the Santa Ana Indian Pueblo (see certification provided by the Pueblo of Isleta, CWA410Cert_Pueblo of Santa Ana_2021 MSGP):

9.6.3.4.1 *Submission of NOI.*

The permittee shall provide a copy of the Notice of Intent (NOI) to the Pueblo of Santa Ana (the Pueblo), at the same time it is submitted to the U.S. Environmental Protection Agency (EPA), for projects with discharges onto the lands of the Pueblo as defined in the Pueblo's antidegradation policy within the Pueblo of Santa Ana Water Quality Standards. See *id.* at 2-3.

9.6.3.4.2 *SWPPP Availability.*

The permittee shall provide a final copy of the Stormwater Pollution Prevention Plan (SWPPP) to the Pueblo that is associated with any project identified in the NOI, at the same time that an NOI is submitted to the EPA. The SWPP should include any projects with discharges onto the lands of the Pueblo as defined in the antidegradation policy within the Pueblo of Santa Ana Water Quality Standards. See *id.*

9.6.3.4.3 *Additional Reporting.*

The permittee shall provide copies of inspections reports and of corrective action reports to the Pueblo at the address below for review, upon request. See *id.*

9.6.3.4.4 *Submission of NOT.*

Upon completion of the project identified in the NOI, the permittee will submit a Notice of Termination (NOT) to the Pueblo. See *id.*

9.6.3.4.5 *Where to Submit Information.*

All required or requested permittee specific information identified above shall be submitted to the following address:

Pueblo of Santa Ana Department of Natural
Resources, Attention: Water Resources Division
2 Dove Road
Santa Ana Pueblo, NM, 87004

9.6.3.4.6 *Additional Reporting to the Pueblo.*

Discharges are not authorized by the permittee unless an accurate and complete NOI and SWPPP have been submitted to the Pueblo. Failure to

provide an accurate and complete NOI and SWPPP may result in a denial of the discharge permit, or a delay in groundbreaking or construction. See *id.*

9.6.3.4.7 *Start Work Authorization.*

The permittee will not proceed with site work until authorized by the Pueblo. The Pueblo requires review of the complete and final SWPP before authorization to proceed. The Pueblo will provide and "Authorization to Process" notice after review and approval of the SWPPP. See *id.*

9.6.3.4.8 *Additional Monitoring.*

The permittee could be required to perform water quality monitoring, sampling or analysis during the active permit dates for constituents determined by the Pueblo. See *id.*

9.6.3.4.9 *Site Stabilization.*

Before submitting a NOT, permittees must certify to the Pueblo's Department of Natural Resources in writing that requirements for site stabilization have been met, and any temporary erosion control structures have been removed. Documentation of the Pueblo's review that such requirements have been reviewed and met will be provided for the permittee to add to the permittee's NOT submission to EPA. Copies of all NOT submitted to the EPA must also be sent to the Pueblo at the address provided above. See *id.*

9.6.3.4.10 *Additional Correspondence.*

Copies of all Notifications (Notice of Intent, Notice of Termination, or other communications), associated analytical data, and written reports for actions covered under this permit occurring on Pueblo of Santa Ana lands or within five river miles of the northern exterior boundary of Pueblo of Santa Ana lands shall be provided to the Pueblo of Santa Ana Department of Natural Resources at same time they are provided to the U.S. Environmental Protection Agency.

Any correspondence between the applicant and EPA related to corrective action, enforcement, monitoring, or adverse incident written reports should likewise be routed to the Pueblo of Santa Ana Department of Natural Resources. The Pueblo of Santa Ana reserves the right to request additional information or study and may delay or deny a permit for cause. All requested materials shall be sent to: Pueblo of Santa Ana Department of Natural Resources, 2 Dove Road, Santa Ana Pueblo, NM, 87004. See *id.*

9.6.3.5 <u>Pueblo of Santa Clara.</u>

The following condition applies only to discharges on the Santa Clara Indian Pueblo (see certification provided by the Pueblo of Isleta, CWA410Cert_Pueblo of Santa Clara_2021 MSGP):

9.6.3.5.1 *Submission of NOI, NOT and SWPPP.*

The operator(s) provide an electronic copy of Notice of Intent (NOI) to the Santa Clara Pueblo Office of Environmental Affairs within 7 business days after electronic confirmation is received from the U.S. Environmental Protection Agency (EPA) that the submitted NOI was certified and is undergoing its 30-day review period. An electronic copy of the Notice of Termination (NOT) shall be provided to the Santa Clara Pueblo Office of Environmental Affairs within 5 calendar days after electronic confirmation is received from the EPA that the NOT has been accepted. A copy of the Storm Water Pollution Prevention Plan

shall be made available to the Pueblo of Santa Clara staff upon request. *See id. 1-4.*

9.6.3.5.2 *Where to Submit Information.*

Electronic copies of all required or requested documents shall be emailed to the Santa Clara Pueblo Office of Environmental Affairs at dinoc@santaclarapueblo.org. If an electronic copy can't be provided, a hard copy may be mailed to:

Santa Clara Pueblo Governor's Office
P.O. Box 580
Espanola, NM 87532

9.6.4 OKR05I000: Indian country within the State of Oklahoma

9.6.4.1 Pawnee Nation

The following condition applies only to discharges in Pawnee Nation (see certification provided by the Pueblo of Isleta, CWA410Cert_Pawnee Nation of Oklahoma_2021 MSGP):

9.6.4.1.1 *Submission of NOI and NOT.*

The operator(s) must provide a copy of the Notice of Intent (NOI) to the Pawnee Nation the same day electronic confirmation is received from the U.S. Environmental Protection Agency (EPA) that the submitted NOI was certified and is undergoing its 30-day review period. Additionally, a copy of the Notice of Termination (NOT) must be provided the same day electronic confirmation is received from the EPA that the NOT has been accepted. Electronic copies of the NOI and NOT shall be submitted to the Pawnee Nation Department of Environmental Conservation and Safety by email to: dnrs@pawneenation.org. See *id.*

9.6.4.1.2 *SWPPP Availability.*

The operator(s) must provide an electronic copy of the Storm Water Pollution Prevention Plan(s) to the Pawnee Nation by email to Pawnee Nation Department of Environmental Conservation and Safety, dnrs@pawneenation .org at least 30 days prior to submitting the NOI to EPA and the Pawnee Nation. See *id.*

9.6.4.1.3 *Additional Reporting.*

The Pawnee Nation must be notified at 918.762.3655 immediately upon discovery of any non-compliance with any provision of the permit conditions. See *id.*

9.6.5 OKR05F000: Facilities in the State of Oklahoma not under the jurisdiction of the Oklahoma Department of Environmental Quality or the Oklahoma Department of Agriculture, Food and Forestry, except those on Indian Country. EPA jurisdiction facilities include SIC Codes 1311, 1381, 1382, 1389, and 5171

No additional requirements.

9.6.6 TXR05F000: Facilities in the State of Texas not under the jurisdiction of the Texas Commission on Environmental Quality, except those on Indian Country. EPA- jurisdiction facilities include SIC Codes 1311, 1321, 1381, 1382, and 1389 (other than oil field service company "home base" facilities)

No additional requirements.

9.6.7 TXR05I000: Indian country within the State of Texas

No additional requirements.

9.7 EPA Region 7: Iowa, Kansas, Missouri, Nebraska (except see Region 8 for Pine Ridge Reservation Lands)

9.7.1 IAR05I000: Indian country within the State of Iowa

9.7.1.1 Meskwaki Nation

The following condition applies only to discharges on the Meskwaki Nation (see certification provided by the Pueblo of Isleta, CWA410Cert_Meskwaki Nation_2021 MSGP):

9.7.1.1.1 *Document Submission.*

All original and revised documents required by this permit, including SWPPP, NOI, Change NOI, and NOT, must be submitted electronically to MNRD 30 calendar days prior to the submission deadline to EPA. Incidental reporting, such as AIM documentation and plans, must be submitted to the MNRD at the same time that they are submitted to EPA. See id. at 1-3.

9.7.1.1.2 *Monitoring Data Submission.*

All discharge monitoring data required by this permit should be submitted electronically to the Meskwaki Natural Resources Department (MNRD) at the time of submission to EPA in the same form as it is submitted to EPA. See *id.*

9.7.1.1.3 *Where to Submit Information.*

Contact the MNRD office by phone at 641-484-3511 to gather submission details. See *id.*

9.7.2 KSR05I000: Indian country within the State of Kansas

No additional requirements.

9.7.3 NER05I000: Indian country within the State of Nebraska, except Pine Ridge Reservation lands (see Region 8)

No additional requirements.

9.8 EPA Region 8: Colorado, Montana, North Dakota, South Dakota, Wyoming, Utah (except see Region 9 for Goshute Reservation and Navajo Reservation Lands), the Ute Mountain Reservation in NM, and the Pine Ridge Reservation in NE

9.8.1 COR05F000: Areas in the State of Colorado, except those located on Indian country, subject to industrial activity by a Federal Operator

No additional requirements.

9.8.2 COR05I000: Indian country within the State of Colorado, as well as the portion of the Ute Mountain Reservation located in New Mexico

9.8.2.1 Southern Ute Indian Tribe

The following condition applies only to discharges within the Southern Ute Indian Reservation (see certification provided by the Southern Ute Indian Tribe, CWA410Cert_Southern Ute Indian Tribe_2021 MSGP):

9.8.2.1.1 *Submission of SWPPP.*

The applicant must submit its Stormwater Pollution Prevention Plan (SWPPP) to the Tribe's Environmental Programs Division at the same time or

immediately after the applicant submits its Notice of Intent (NOI) to EPA. At the applicant's option, the submittal may be made electronically.

This condition must be met to give the Tribe an opportunity, in consultation with EPA, to ensure that the permittee has developed an adequate SWPPP for the facility. This

is a minimum requirement for the proposed permit and a less stringent condition does not exist for the Tribe's certification. See *id.* at 1, 4-7.

9.8.2.1.2 *Submission of NOI and NOT.*

The applicant must send a copy of its Notice of Intent (NOI) and Notice of Termination (NOT) to the Tribe's Environmental Programs Division at the same time or immediately after the applicant sends those documents to EPA. At the applicant's option, the submittal may be made electronically. See *id.*

9.8.2.1.3 *Authorization to Inspect.*

The permittee shall allow employees of the Tribe's Environmental Programs Division access to inspect any facility, equipment, practices, or operations regulated or required under this permit and to access records maintained under the conditions of this permit. See *id.*

9.8.2.1.4 *Where to Submit Information*

Information submitted to the Tribe's Environmental Programs Division must be sent to the following address:

Environmental Programs Division
P.O. Box 737 MS#81 Ignacio, CO 81137
jseebach@southernute-nsn.gov

9.8.3 MTR05I000: Indian country within the State of Montana

No additional requirements.

9.8.4 NDR05I000: Indian country within the State of North Dakota, as well as that portion of the Standing Rock Reservation located in South Dakota (except for the portion of the lands within the former boundaries of the Lake Traverse Reservation which is covered under South Dakota permit SDR05I000 listed below)

No additional requirements.

9.8.5 SDR05I000: Indian country within the State of South Dakota, as well as the portion of the Pine Ridge Reservation located in Nebraska and the portion of the lands within the former boundaries of the Lake Traverse Reservation located in North Dakota(except for the Standing Rock Reservation which is covered under North Dakota permit NDR05I000 listed above)

No additional requirements.

9.8.6 UTR05I000: Indian country within the State of Utah, except Goshute and Navajo Reservation lands (see Region 9)

No additional requirements.

9.8.7 WYR05I000: Indian country within the State of Wyoming

No additional requirements.

9.9 EPA Region 9: California, Hawaii, Nevada, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, the Confederated Tribes of the Goshute Reservation in Utah and Nevada, Indian Country within the State of Arizona including the Navajo Reservation in Utah and New Mexico and Arizona, the Duck Valley Reservation in Idaho, and the Fort McDermitt Reservation in Oregon.

9.9.1 ASR050000: American Samoa

No additional requirements.

9.9.2 AZR05I000: Indian country within the State of Arizona, including Navajo Reservation lands in New Mexico and Utah

No additional requirements.

9.9.3 CAR05I000: Indian country within the State of California

9.9.3.1 Hoopa Valley Tribe

Facilities in the Hoopa Valley Tribe lands are not eligible for stormwater discharge coverage under this permit. Contact the EPA Region 9 office for an individual permit application.

9.9.3.2 Morongo Band of Mission Indians

The following condition applies only to discharges in the Indian country of the Morongo Band of Mission Indians (see certification provided by the Morongo Band of Mission Indian, CWA410Cert_Morongo Band of Mission Indians_2021 MSGP):

9.9.3.2.1 *Compliance with Local Law.*

This certification does not exempt, and is provisional upon compliance with, other applicable statutes and codes administered by Federal and Tribal agencies. Pursuant to the Morongo Band of Mission Indians Surface Water Quality Protection Ordinance (Ordinance 39), all unpermitted discharges must be reported to the Morongo Band of Mission Indians Environmental Protection Department within 24 hours of the incident. See *id.* at 1.

9.9.3.2.2 *Submission of NOI and SWPPP.*

Each operator shall submit copies of the Notices of Intent (NOI) and Stormwater Water Pollution Plans (SWPPPs) to the Morongo Environmental Protection Department at the same time they are submitted to EPA. See *id.*

9.9.3.2.3 *Additional Reporting.*

All monitoring data and exceedance reports shall be provided to the Morongo Environmental Protection Department. See *id.*

9.9.3.2.4 *Where to Send Information.*

All required or requested documents should be submitted to:

Morongo Band of Mission Indians
Environmental Protection Department 12700 Pumarra Road
Banning, CA 92220
Or electronically at epd@morongo-nsn.gov

9.9.3.3 Twenty-Nine Palms Band of Mission Indians

The following condition applies only to discharges in the Indian country of the Twenty-Nine Palms Band of Mission Indians (see certification provided by the Twenty-Nine Palms Band of Mission Indians, CWA410Cert_Twenty-Nine Palms Band of Mission Indians_2021 MSGP):

9.9.3.3.1 *Submission of NOI*

Tribal EPA must receive written notification of the intent to discharge, and must be afforded the opportunity to evaluate whether the specific pollutant discharge proposed will violate TWQS prior to EPA granting the permit. See *id.* at 1-2

9.9.3.3.2 *Reporting*

Permitted entities under the MSGP must keep Tribal EPA informed of authorized discharges under the MSGP by submitting written information about the type, quantity, frequency and location, intended purpose, and potential human health

and/or environmental effects of their activities. These requirements are pursuant to Article 4 of the Twenty-Nine Palms Band of Mission Indians Water Pollution Control Ordinance {022405A). This information may be submitted to Tribal EPA in the form of Storm Water Pollution Prevention Plans (SWPPPs}, monitoring reports, or other reports as required under the MSGP. Spills, leaks, or unpermitted discharges must be reported in writing to Tribal EPA within 24 hours of the incident. See *id.*

9.9.4 GUR050000: Island of Guam

The following condition applies only to discharges in Guam (see certification provided by the Island of Guam, CWA410Cert_Guam_2021 MSGP):

9.9.4.1 *General Conditions*

a. A1. For purposes of this Order, the term "'Applicant" shall mean U.S. Environmental Protection Agency, and its agents, assignees, and contractors.

b. A2. For purposes of this Order, the permit "Permittee" shall mean any facility granted coverage under EPA's 2020 Multi-Sector General Permit.

c. A3. The Applicant shall enforce the proposed 2020 MSGP and ensure that the Permittee complies with the conditions of the permit at all times.

d. A4. Nothing in this Order waives Guam EPA's authority to issue additional orders if Guam EPA determines that further actions are necessary to implement Guam water quality laws, or if additional conditions are necessary to further protect water quality.

e. A5. In the event of changes or amendments to GWQS, or changes in or amendments to the Guam Water Pollution Control Act or the federal Clean Water Act, Guam EPA may issue an amendment to this Order to incorporate any such changes or amendments applicable to the proposed 2020 MSGP.

f. A6. Failure of any person or entity to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

g. A7. All submittals required by this Order shall be sent to the Guam Environmental Protection Agency Attn: 401 Federal Permit Manager, Non-Point Source Program, EMAS Division, 3304 Mariner Avenue, Bldg. 17-3304, Barrigada, Guam 96913, AND via email to jesse.cruz@epa.guam.gov. *The submittals shall be identified with WQC Order #2020-10 and include the MSGP Permit Number, certifying representative's name, title, mailing address and phone number.*

h. A8. This condition is specific to Sector J. Mineral Mining and Dressing covered by the proposed 2020 MSGP: Prior to any earth moving activities, a Clearing and Grading or Building Permit, shall be approved by Guam EPA. Sediment control designs and erosion control Best Management Practices (BMPs) must meet the design standard criteria required in the CNMI and Guam Stormwater Management Manual (October 2006) and in the Guam Soil Erosion and Sediment Control Regulations.

i. A9. This condition is specific to section 2.1 Control Measures of the proposed 2020 MSGP: The selection and installation of stormwater control measures shall meet the design criteria and standards in the CNMI and Guam Stormwater Management Manual (October 2006) and the Guam Soil Erosion and Sediment Control Regulations.

j. AIO. A signed copy of the Notice of Intent (NOi), Stormwater Pollution Prevention Plan (SWPPP), and Notice of Termination (NOT) shall be submitted to Guam EPA, consistent with condition A7, at the same time it is submitted to U.S. EPA for review and approval. Coordination with Guam EPA is encouraged

when the receiving water(s) for the proposed stormwater discharge is/are being identified.

k. A11. The coordinates and location of any proposed discharge outfall(s) shall be submitted to Guam EPA for review and approval, consistent with condition A7. Specific discharge information shall also be submitted.

l. Al2. The NOT application shall be submitted to Guam EPA for review and approval prior to submittal to U.S. EPA, consistent with condition A7. Guam EPA may conduct inspections to ensure that conditions of termination have been met and sources of pollutants have been removed or adequately mitigated. Guam EPA may advise U.S. EPA as to findings and recommendations concerning the Permittee's proposed termination of permit coverage.

m. A13. A copy of all final and local permits shall be provided to Guam EPA within two weeks of receipt, consistent with condition A7.

n. A14. Reports, monitoring and analytical data (e.g. Discharge Monito ring Reports (DMRs), follow-up monitoring reports, Exceedance Reports for Numerical Effluent Limits. etc.) submitted to EPA shall be concurrently submitted to Guam EPA, consistent with condition A7.

o. A 15. A copy of the MSGP, SWPPP, and NOI shall be on file at the Permittee and readily accessible.

p. A16. Guam EPA shall be allowed access to any MSGP industrial facility and mitigation sites at any reasonable time to perform compliance inspections, monitoring, necessary data collection, and/or to ensure that discharge is not in violation of permit conditions, the Guam Water Pollution Control Act, GWQS, or any applicable Guam laws and/or regulations.

q. A17. This Order does not authorize direct, indirect, permanent, or temporary impacts to waters under Guam EPA's jurisdiction (including wetlands) or related aquatic resources, except as specifically provided for in conditions of this Order.

r. A18. A signed Statement of Understanding of Water Quality Certification Conditions shall be submitted to Guam EPA (see Attachment A for an example) per condition A7. See *id.* at 1-3.

9.9.4.2 *Water Quality Conditions*

a. Stormwater discharges to waterbodies under the jurisdiction of Guam EPA must be consistent with the antidegradation policy in 22GAR §510l(b).

b. B2. All discharges shall comply with the Guam Water Pollution Control Act (10 GCA Chapter 47) and implementing regulations at 22 GAR Chapter 5 (GWQS) and 22 GAR Chapter 10 (Guam Soil Erosion and Sediment Control (SESC) Regulations). Furthermore, nothing in this Order shall absolve the Permittee from liability for contamination and any subsequent cleanup of marine waters, surface waters, ground waters, or sediments occurring as a result of proposed 2020 MSGP stormwater discharges.

c. B3. 2020 MSGP industrial stormwater discharges are prohibited as follows:

   i. In Marine Waters, Category M-1 Excellent (22 GAR Chapter 5 §5102(b)(1));
   and

   ii. In Surface Waters, Category S-1 High (22 GAR Chapter 5 §5102(c)(l)).

d. B4. All point source discharges to Guam's waters will be controlled (permitted) through the Federal NPDES, or through the Guam Environmental Protection Agency's local permit program, consistent with the requirements of these programs. 22 GAR Chapter 5 §5104(a)(l2)

e. B5. Dewatering is not permitted under this certification. Dewatering activities shall require a separate Dewatering Permit from the Agency prior to any dewatering activity.

f. B6. Mitigation and/or additional monitoring may be required if site inspections indicate water quality standards have not been met. See *id.*

EMERGENCY/CONTINGENCY MEASURES:

g. B7. The Permittee shall develop and implement a Spill Prevention and Containment Plan.

h. B8. The Permittee shall have adequate and appropriate spill response materials on hand to respond to emergency release of oil, petroleum or any other material into waters of the territory.

i. B9. Any unpermitted discharge into territorial waters or onto land with a potential for entry into territorial waters, is prohibited. If this occurs, the Permittee shall immediately take the following actions:

   i. Cease operations at the location of the violation or spill.

   ii. Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.

   iii. Notify Guam EPA of the failure to comply. All petroleum spills shall be reported immediately to:

      1) Guam's Emergency 911 system

      2) Guam EPA's 24-Hour Spill Response Team at (67 l) 888-6488 or during working hours (67 J) 300-475l

      3) U.S. Coast Guard Sector Guam (671) 355-4824

      4) National Response Center 1-800-424-8802

   iv. Submit a detailed written report to Guam EPA within five days of noncompliance that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information. See *id.*

j. B10. Compliance with this condition does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply. See *id.*

k. B11. Submittal or reporting of any of this information does not provide relief from any subsequent enforcement actions for unpermitted discharges to waters of the United States. See *id.*

9.9.4.3 *Timing Requirements*

a. CI. This Order is valid for five (5) Years from Date of Certification, unless otherwise approved by the Guam EPA Administrator. See *id.*

b. C2. The Permittee shall be required to adhere to the current Guam Coral Spawning Moratorium dates for both hard and so ft corals where in-water activities may impair water quality. These dates can be obtained from the Guam Department of Agriculture, Division of Aquatic and Wildlife Resources, or the NOAA NMFS Pacific Islands Regional Office Habitat Conservation Division. See *id.*

9.9.4.4 *Reporting and Notification Requirement Conditions*

a. Dl. The Permittee shall provide notice to Guam EPA consistent with Condition A7: Immediately upon discovery of noncompliance with the provisions of this Order.

b. D2. A Notice of Violation/Work Stop Order will be issued if certification conditions are not adhered to or when significant or sustained water quality degradation occurs. Work or discharge shall be suspended or halted until the Permittee addresses environmental problems/concerns to Guam EPA's satisfaction. Guam EPA may also levy penalties and fines (IO GCA §47111). Invalidity or enforceability of one or more provisions of this certification shall not affect any other provision of this certification. See *id.*

9.9.4.5 *Right to Appeal*

You have a right to appeal this Order to the Guam EPA Board of Directors, or request a hearing within 30 days of the date of receipt of this Order. Failure to appeal this Order constitutes a waiver of your right to a hearing. Any appeal will proceed pursuant to the provisions of 5 GCA Chapter 9, as provided by 22 GAR §5 l06(i)(7). Unless a written request for a hearing, signed by or on behalf of the person named as Applicant in the accompanying order, is delivered or mailed to the agency within 30 days after this order is signed, Guam EPA may proceed upon the Notice of Intent to Appeal without a hearing. The request for hearing may be made by delivering or mailing the enclosed form entitled Notice of Intent to Appeal (Appendix B) as provided in §9205 to the address below.

To appeal you must do both of the following within 30 days of the date of receipt of this Order:

a. File your appeal and a copy of this Order with the Guam EPA Board of Directors (see address below). Filing means actual receipt by the Guam EPA Board of Directors during regular business hours.

b. Serve a copy of your appeal and this Order to the Administrator in paper form - by mai1 or in person at the address below. Email or facsimile is not accepted. See *id.*

9.9.4.6 *Address Information*

GUAM EPA Board of Directors
3304 Mariner Avenue, Bldg. 17 - 33 04, Barrigada, Guam 96913

9.9.5 JAR050000: Johnston Atoll

No additional requirements.

9.9.6 MWR050000: Midway Island and Wake Island

No additional requirements.

9.9.7 MPR050000: Commonwealth of the Northern Mariana Islands

No additional requirements.

9.9.8 NVR05I000: Indian country within the State of Nevada, including the Duck Valley Reservation in Idaho, the Fort McDermitt Reservation in Oregon and the Confederated Tribes of the Goshute Reservation in Utah

No additional requirements.

9.10 Region 10: Alaska, Idaho (except see Region 9 for Duck Valley Reservation lands), Oregon (except see Region 9 for Fort McDermitt Reservation), Washington

9.10.1 AKR05F000: Areas in the Denali National Park and Preserve subject to industrial activity by a Federal Operator

No additional requirements.

9.10.2 AKR05I000: Indian country lands as defined in 18 U.S.C 1151 within the State of Alaska

No additional requirements.

9.10.3 IDR050000: The State of Idaho, except Indian country lands

Operators in the State of Idaho must meet the following conditions (see certification provided by the State of Idaho, CWA410Cert_ID_2021 MSGP).

9.10.3.1 *Numeric Benchmarks and Effluent Limitations*

Due to the discrete and relatively short duration of storm events that would result in discharges under this MSGP, DEQ believes it is appropriate to set numeric benchmarks and effluent limits based on acute aquatic life criteria rather than chronic aquatic life criteria or human health criteria, which are based on longer-term exposures. See *id.* at 1-7.

pH - The 2020 MSGP proposes a universal pH benchmark range of 6.0-9.0 standard units, which does not comply with Idaho WQS (IDAPA 58.01.02.250.01.a). Therefore, numeric effluent limitations and benchmark monitoring cutoff concentrations for pH shall be 6.5-9.0 standard units.

Total Arsenic - The 2020 MSGP proposes a total arsenic effluent limitation (Subsector G & Sector K) of 1.1 mg/L, which exceeds Idaho's acute and chronic criteria of 0.34 mg/L and 0.15 mg/L, respectively. Given that storms are discrete events of relatively short duration, DEQ believes it is more appropriate to use the acute water quality criteria as benchmark values; therefore, DEQ will require the total arsenic effluent limit to be set equal to Idaho's acute criterion of 0.34 mg/L.

Total Zinc - The 2020 MSGP proposes a monthly average maximum numeric effluent limit for zinc of 0.535 mg/L for Sector K, which will only comply with water quality standards when hardness is greater than 535 mg/L. Similarly, the proposed maximum daily limit and the monthly average maximum limit for zinc is 0.2 mg/L and 0.11 mg/L, respectively for Sector L; these limits do not generally comply with WQS when hardness values for the receiving water are less than 130 mg/L and 85 mg/L, respectively. Therefore, DEQ will require that the total zinc effluent limit be hardness based for all sectors requiring zinc effluent limits, including Sectors K and L.

Cadmium – The 2020 MSGP proposes hardness-based numeric benchmarks for cadmium based on EPA's 2016 Aquatic Life Ambient Water Quality Criteria for Cadmium. Idaho adopted state- specific cadmium criteria different from EPA's recommended national criteria; therefore, DEQ will require that cadmium benchmarks for all sectors subject to cadmium benchmarks be based on Idaho's hardness-based acute cadmium criterion, using the following table:

Freshwater Hardness Range (mg/L)	Cadmium Benchmark (µg/L)
0-24.99	0.20
25-49.99	0.42

50-74.99	0.75
75-99.99	1.05
100-124.99	1.34
125-149.99	1.62
150-174.99	1.88
175-199.99	2.14
200-224.99	2.39
225-249.99	2.64
>250	2.89

Chromium III – The 2020 MSGP proposes a benchmark Chromium III concentration of 570 µg/L. However, this concentration will only comply with Idaho WQS when hardness is 100 mg/L or greater. Therefore, DEQ will require that Chromium III benchmarks be based on the hardness-based acute Chromium III criterion, using the following table:

Freshwater Hardness Range (mg/L)	Chromium III Benchmark (µg/L)
0-49.99	183
50-74.99	323
75-99.99	450
100-124.99	570
125-149.99	684
150-174.99	794
175-199.99	901
200-224.99	1005
225-249.99	1107
>250	1207

Total Recoverable Copper – The 2020 MSGP proposes hardness-based numeric benchmarks for copper. However, Idaho water quality standards require that copper criteria be derived using the Biotic Ligand Model (BLM). In order to ensure compliance with the copper BLM criteria, the permittee for each facility subject to copper benchmarks in the 2020 MSGP must implement one of the following options:

a. Utilize a numeric benchmark for copper that corresponds to the most conservative estimate of acute copper criteria for Idaho waters: 1.0 µg/L; or

b. Collect BLM input parameters as described in IDAPA 58.01.02.210.03.c concurrent with quarterly benchmark monitoring, use the BLM to derive an acute copper criterion based on these data, and apply that BLM-derived criterion as the numeric copper benchmark; or

c. Make a written application for, and obtain DEQ approval of, a numeric copper benchmark that is protective of aquatic life in the receiving waters before discharging under the 2020 MSGP. See *id.*

9.10.3.2 *Monitoring of Discharges to Impaired Waters*

The proposed 2020 MSGP does not require monitoring on impaired waters where no pollutant has been identified as the cause of impairment. For water bodies included on the state's 303(d) list (Category 5 of the Integrated Report) as "cause unknown," or "combined biota/habitat assessments" the permittee must monitor for suspected pollutants listed in the cause comments section of the integrated report (e.g., nutrients, metals, pesticides). See *id.*

9.10.3.3 *New or Expanding Discharges*

New dischargers or existing dischargers wishing to expand their discharge to high-quality waters are only eligible for coverage under the MSGP if the discharger establishes, to the satisfaction of EPA and DEQ, that the new or expanded discharge will not result in an increase in the concentration of pollutants relevant to the use for which the water is considered high quality, or that the increase constitutes insignificant degradation as defined in the WQS (IDAPA 58.01.02.052.08.a).

A new discharger or an existing discharger wishing to expand must include an analysisregarding whether the new or expanded discharge will cause an increase in the pollutants relevant to the use for which the water is considered high quality. If there is an increase, the permittee must identify whether that increase constitutes insignificant degradation in the NOI, or in the planned changes report. These NOIs and planned changes reports must be submitted to both EPA and DEQ.

If DEQ determines the new discharge or planned changes of an existing discharger will result in significant degradation, the permittee must provide to DEQ an alternatives analysis (IDAPA 58.01.02.052.08.c), a socioeconomic justification (IDAPA 58.01.02.052.08.d) and information regarding other source controls (IDAPA 58.01.02.052.08.b), and obtain DEQ's approval in accordance with Idaho's antidegradation implementation process (IDAPA 58.01.02.052.08.e). See *id.*

9.10.3.4 *Outstanding Resource Waters.*

Any permittee proposing to discharge to an outstanding resource water shall not be covered under this General Permit (Permit Part I.E.8) and is required to apply for an individual IPDES permit from DEQ (IDAPA 58.01.02.052.09). See *id.*

9.10.3.5 *Sector L – Stormwater and Leachate*

Stormwater entering a landfill, including runoff from areas that have received

daily cover which may have contacted waste material, must be managed as leachate and is thus not eligible for coverage under the MSGP (40 CFR 258.26(a)(2); Municipal Solid Waste Landfill Criteria Technical Manual, EPA 530-R-93-017, 1998). Stormwater from a closed landfill or from areas of the landfill that have received final cover is not leachate and may be covered under the MSGP. See *id.*

9.10.3.6 *Stormwater Pollution Prevention Plan (SWPPP) Availability.*

If requested by DEQ, the permittee must submit a copy of the SWPPP to DEQ within 14 days of the request. See *id.*

9.10.3.7 *Reporting of Discharges Containing Hazardous Materials or Petroleum Products.*

Any spill of hazardous materials must be immediately reported to the State Communications Center by calling 1-800-632-8000 or 208-846-7610.

Spills must also be reported to the appropriate DEQ Regional Office (Table 1). Spills of petroleum products that exceed 25 gallons or that cause a visible sheen on surface waters should be reported to DEQ within 24-hours. Petroleum product spills of less than 25 gallons or spills that do not cause sheen on surface waters must only be reported to DEQ if clean-up cannot be accomplished within 24-hours (IDAPA 58.01.02.850, 58.01.02.851, 58.01.02.852). See *id.*

9.10.3.8 *Other Reporting Requirements*

Copies of the following information must be sent to the appropriate DEQ Regional Office:

a. Notices of Intent and Termination (NOIs and NOTs), as required by Permit Part 7.2.1

b. Monitoring data collected pursuant to Permit Part 4 of the MSGP, as well as any additional monitoring required by this § 401 water quality certification

c. Exceedance Reports, as required by Permit Part 7.5

d. Planned Changes Reports, as required by Permit Parts 7.6.4 and 7.6.5

Both monitoring data and exceedance reports must be sent to the appropriate DEQ Regional Office within 30 days of receipt of the analytical results. DEQ Regional Office contact information is listed in Table 1. See *id.*

9.10.3.9 *Material Modifications*

Pursuant to 33 U.S.C. § 1341, this certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, significant changes to the MSGP, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401. See *id.*

9.10.3.10 *Alternative Limitations*

The following condition in the MSGP can be made less stringent and still comply with WQS:

Benchmark Values

The benchmark value for arsenic is 150 µg/L. This value is equivalent to Idaho's chronic water quality criterion. Given that storms are discrete events of relatively short duration, DEQ believes it is more appropriate to use the acute water quality

criterion as a benchmark value. Therefore, the benchmark value for arsenic can be set equal to 340 µg/L, and still comply with Idaho WQS. See *id.*

9.10.3.11 *Idaho DEQ Regional and State Office Contacts.*

Table 1. Idaho DEQ regional and state office contacts.

Regional and State Office	*Address*	*Phone Number*	*Email*
Boise	1145 N. Orchard St., Boise 83706	208-373-0550	kati.carberry@deq.idaho.gov
Coeur d'Alene	2110 Ironwood Parkway, Coeur d'Alene 83814	208-769-1422	chantilly.higbee@deq.idaho.gov
Idaho Falls	900 N. Skyline Dr., Suite B, Idaho Falls 83402	208-528-2650	troy.saffle@deq.idaho.gov
Lewiston	1118 F St., Lewiston 83501	208-799-4370	sujata.connell@deq.idaho.gov
Pocatello	444 Hospital Way, #300, Pocatello 83201	208-236-6160	lynn.vanevery@deq.idaho.gov
Twin Falls	650 Addison Avenue West, Suite 110, Twin Falls 83301	208-736-2190	sean.woodhead@deq.idaho.gov
State Office	1410 North Hilton St., Boise 83706	208-373-0502	jason.pappani@deq.idaho.gov

9.10.4 IDR05I000: Indian country lands within the State of Idaho, except Duck Valley Reservation lands, which are covered under Nevada permit NVR05I000

9.10.4.1 Shoshone-Bannock Tribes

The following conditions apply only to discharges to waters of the Shoshone-Bannock Tribes (see certification provided by the Shoshone-Bannock Tribes, CWA410Cert_Shoshone-Bannock Tribes_2021 MSGP):

9.10.4.1.1 *Submission of NOI, Monitoring Data, and Reports.*

Copies of the following information must be sent to the SBT-WRD:

- Notice of Intents (NOI)
- Monitoring data collected pursuant to section 4.2 of the MSGP
- Exceedance Reports

The monitoring data and exceedance reports must be sent to the SBT-WRD within thirty (30) days of receipt of analytical results. See *id* at1-3.

Contact information for SBT-WRD:

Shoshone-Bannock Tribes Water Resources Department
PO Box 306 Pima Drive
Fort Hall, ID 83203
Phone: (208) 239-4582
Fax:(208)239-4592

9.10.4.1.2 *SWPPP Availability.*

If requested by the SBT-WRD, the permittee must submit a copy of the SW PPP to SBT-WRD within fourteen (14) days of the request. See *id.*

9.10.5 ORR05I000: Indian country lands within the State of Oregon, except Fort McDermitt Reservation lands, which are covered under Nevada permit NVR05I000

No additional requirements.

9.10.6 WAR05I000: Indian country lands within the State of Washington

9.10.6.1 Confederated Tribes of the Colville Reservation

No additional requirements.

9.10.6.2 Lummi Nation

No additional requirements.

9.10.6.3 Puyallup Tribe of Indians

No additional requirements.

9.10.6.4 Port Gamble S'Klallam Tribe

The following conditions apply only to discharges to waters of the Port Gamble S'Klallam Tribal Land (see certification provided by the Port Gamble S'Klallam Tribe, CWA410Cert_Port Gamble S'Klallam Tribe_2021 MSGP):

9.10.6.4.1 *Compliance with Port Gamble S'Klallam Tribe Water Quality Standards.*

Each operator shall be responsible for achieving compliance with the Port Gamble S'Klallam Tribe Water Quality Standards for Surface Waters. Please see the PGST website (pgst.nsn.us) to review a copy of the Port Gamble S'Klallam Tribe Water Quality Standards for Surface Waters See *id.* at 1.

9.10.6.4.2 *Submission of SWPPP*

Each operator shall develop and submit a Storm Water Pollution Prevention Plan to the Port Gamble S'Klallam Natural Resources Department for review and approval by the Tribe prior to beginning any discharge activities. See *id.*

9.10.6.4.3 *Submission of NOI, Reports, and NOT*

Each operator shall submit a copy of the Notice of Intent, analytical monitoring results, any Exceedance Reports, Annual Reports, and Notice of Termination to the PGST Natural Resources Department at the same time it is submitted to the Environmental Protection Agency (EPA). See *id.*

9.10.6.5 Spokane Tribe of Indians

The following conditions apply only to discharges to waters of the Spokane Tribal Land (see certification provided by the Spokane Tribe of Indians, CWA410Cert_Spokane Tribe of Indians_2021 MSGP):

9.10.6.5.1 *Compliance with Water Quality Standards.*

The permitee shall be responsible for achieving compliance with the Spokane Tribal Water Quality Standards. See *id.* at 1.

9.10.6.5.2 *Submission of SWPPP*

The permitee shall submit all Pollution Prevention Plans to the Spokane Tribal Water Control Board for review and approval at the same time they are submitted to EPA and prior to any discharge activities. See *id.*

9.10.6.5.3 *Compliance with IRMP*

The permitee shall comply with all Spokane Tribal Integrated Resource Management Plan (IRMP) guidelines for land use activities and disturbances. See *id.*

9.10.6.5.4 *Inspection.*

The permitee shall allow the Tribal Water Control Board to inspect the storm water management system and adopt recommendations made anytime throughout its operation. See *id.*

9.10.6.5.5 *Monitoring,*

Monitoring of the discharge shall occur at a level indicated by EPA, the Tribe, are subject to change, and shall be submitted to both entities. See *id.*

9.10.6.5.6 *Where to send information.*

Water Control Board c/o Brian Crossley
PO Box 480
Wellpinit, WA 99040

9.10.6.6 Swinomish Indian Tribal Community

Facilities in the Swinomish Indian Tribal lands and are not eligible for stormwater discharge coverage under this permit. Contact the EPA Region 10 office for an individual permit application.

9.10.6.7 Tulalip Tribes

The following conditions apply only to discharges to waters of the Tulalip Tribes (see certification provided by the Tulalip Tribes, CWA410Cert_Tulalip Tribes_2021 MSGP):

9.10.6.7.1 *Submission of NOI, NOT and No Exposure.*

Copies of the Notice of Intent (NOI), Notice of Termination (NOT), and No Exposure Certification shall be submitted to the Tribe's Natural Resources Department. See *id.* at 1-2.

9.10.6.7.2 *Submission of SWPPP.*

A copy of the Stormwater Pollution Plans (SWPPPs) shall be submitted to the Tribe's Natural Resources Department at least thirty (30) days in advance of submitting the NOI to EPA. See *id.*

9.10.6.7.3 *Compliance with Tribe's Water Quality Standards:*

Each permittee shall be responsible for achieving compliance with the Tribe's Water Quality Standards. See *id.*

9.10.6.7.4 *Submission and approval of Monitoring Plans.*

A monitoring plan, if applicable, shall be submitted to the Tribe's Natural Resources Department and approved by the Tribe prior to initiation of monitoring required under Part 6 of this permit. See *id.*

9.10.6.7.5 *Submission of Monitoring Data and Reports:*

The results of any monitoring required by this permit and reports must be sent to the Tribe's Natural Resources Department, including a description of the corrective

actions required and undertaken to meet effluent limits or benchmarks (as applicable). See *id.*

9.10.6.7.6 *Authorization to Inspect.*

The Natural Resources Department staff may conduct an inspection of any facility covered by this permit to ensure compliance with tribal water quality standards. The Department may enforce its certification conditions.

The Tulalip Tribes are federally recognized successors in the interest to the Snohomish, Snoqualmie, Skykomish, and other allied tribes and bands signatory to the Treaty of Point Elliott. See *id.*

9.10.6.7.7 *Incorporation by reference.*

This certification does not exempt the applicant from compliance with other statues and codes administered by the Tribes, county, state and federal agencies. See *id.*

9.10.6.7.8 *Invalidation.*

This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in the permit. This certification will also cease to be valid and the applicant must reapply with an updated application if information contained in the permit is voided by subsequent submittals. See *id.*

9.10.6.7.9 *Modification.*

Nothing in this certification waives the Tulalip Tribes of Washington's authority to issue modifications to this certification if additional impacts due to operational changes are identified, or if additional conditions are necessary to protect water quality or further protect the Tribal Communities interest. See *id.*

9.10.6.7.10 *Permits on-site.*

A copy of the permit shall be kept on the job site and readily available for reference by the construction supervisor, construction managers and site foreman, and Tribal inspectors. In addition, a sign of permit coverage needs to be posted at a safe, publicly accessible location. See *id.*

9.10.6.7.11 *Project Management.*

The applicant shall ensure that project or site managers, construction managers and site foreman, and other responsible parties have read and understand conditions of the permit, this certification, and other relevant documents, to avoid violations or noncompliance with this certification. See *id.*

9.10.6.7.12 *Emergencies/Contingency Measures.*

In the event the operator or applicant is unable to comply with the permit terms and conditions due to any cause, the operator or applicant shall immediately take action to stop the violation and correct the problem, and immediately report spill events to EPA's 24-hour Spill Response Team at (206) 553-1263 and the Tulalip Tribes Police Department (360) 716-5959. Compliance with this condition does not relieve the applicant from responsibility to maintain continuous compliance with the terms and conditions of this certification or the resulting liability from failure to comply. See *id.*

9.10.6.7.13 *Tribal ESA Consultation.*

Consultation with the Tribes is required when permitted actions may effect federally-listed threatened or endangered species and designated critical habitat. Information required as part of the consultation shall include:

a. Basis of the determination that permit actions will not adversely affect federally-listed as endangered or threatened ("listed") under the Endangered Species Act (ESA) and will not result in the adverse modification or destruction of designated critical habitat including appropriate measures to be undertaken to avoid or eliminate the likelihood of adverse effects (under Criterion E in Section 1.1.4.5); and

b. Notice of Intent form complete with extent of action area, list of federally-listed threatened or endangered species or designated critical habitat likely to occur in action area, list of potential pollutants (if you are a new discharger) or list of pollutants for which you have ever exceeded an applicable benchmark or effluent limitations guideline, or for which your discharge has ever been found to cause or contribute to an exceedance of an applicable water quality standard (if you are an existing discharger). See *id.*

9.10.6.7.14 ***Discharges to CERCLA Sites:***

This permit does not authorize direct discharges to certain sites undergoing remedial cleanup actions pursuant to the Comprehensive Environmental Response,

Compensation and Liability Act (CERCLA) unless first approved by the appropriate EPA Regional office. In the case of the Tulalip Landfill site, the Tulalip Tribes also requests notification by the facility and consultation with EPA prior to discharge. Contaminants at this site may include but are not limited to: dioxins, furans, arsenic, copper, lead, zinc, 4-methyl-phenol, Hex-CB, HPAHs, PCBs, PCE, cadmium, mercury, and LPAHs. See *id.*

9.10.6.7.15 ***Discharge-related Activities that have Potential to Cause an Adverse Effect on Historic Properties:***

Installation of stormwater controls that involve subsurface disturbances may potentially have an adverse impact on historic properties. Procedures detailed in Appendix F of the permit shall be completed. Richard Young, of the Tulalip Tribe's Cultural Resources Department shall be contacted prior to initiating discharge-related activities that may have an impact on historic properties. His contact information is (360) 716-2652 and ryoung@tulaliptribes-nsn.gov. See *id.*

9.10.6.7.16 ***Where to Submit Information:***

All required or requested documents shall be sent to the:

Tulalip Tribes
Natural Resources Environmental Division c/o Kurt Nelson and Valerie Streeter
6704 Marine Drive
Tulalip, Washington 98271

9.10.7 WAR05F000: Areas in the State of Washington, except those located on Indian Country lands, subject to industrial activity by a Federal Operator

Permittees in the State of Washington must meet the following conditions (see certification provided by the State of Washington, CWA410Cert_WA_2021 MSGP):

9.10.7.1 ***General Conditions.***

a. For purposes of this Order, the term "Applicant" shall mean U.S. Environmental Protection Agency, and its agents, assignees and contractors.

b. For Purposes of this Order, the Permit "Permittee" shall mean any facility granted coverage under EPA's Multi Sector General Permit.

c. The Applicant shall enforce the permit and ensure that the Permittee complies with

the conditions of the permits at all times.

d. Nothing in the Certification waives Ecology's authority to issue additional orders if Ecology determines that further actions are necessary to implement the water quality laws of the state. Further, Ecology retains continuing jurisdiction to make modifications hereto through supplemental orders, if additional impacts due to project construction or operation are identified (*e.g.,* violations of water quality standards, downstream erosion, etc.), or if additional conditions are necessary to further protect water quality.

e. In the event of changes or amendments to the state water quality, ground water quality, or sediment standards, or changes in or amendments to the state Water Pollution Control Act (RCW 90.48) or the federal Clean Water Act, Ecology may issue an amendment to this Certification to incorporate any such changes or amendments applicable to this project.

f. Failure of any person or entity to comply with this Certification may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of the Certification. See *id.* at 3.

9.10.7.2 *Water Quality.*

a. This Certification does not authorize exceedances of water quality standards established in chapter 173-201A WAC.

b. Discharges shall not cause or contribute to a violation of surface water quality standards (chapter 173-201A WAC), ground water quality standards (chapter 173-200 WAV), sediment management standards (chapter 173-204 WAC), and human health based criteria in the National Toxics Rule (40 CRF Part 131.36). Discharges that are not in compliance with these standards are not authorized.

c. Prior to the discharge of stormwater and non-stormwater to waters of the state, the Permittee shall apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate Stormwater Pollution Prevention Plan (SWPPP), with all appropriate best management practices (BMPs) installed and maintained in accordance with the SWPPP and the terms and conditions of this permit. The Permittee shall include each of the following mandatory BMPs in the SWPPP and implement the BMPs. The Permittee may omit individual BMPs if site conditions render the BMP unnecessary or infeasible and the Permittee provides alternative and equally effective BMPs. The Permittee must justify each BMP omission in the SWPPP. BMPs shall be consistent with:

   i. *2019 Stormwater Management Manual for Western Washington*, for sites west of the crest of the Cascade mountains; or

   ii. *2019 Stormwater Management Manual for Eastern Washington*, for sites east of the crest of the Cascade Mountains; or

   iii. Revisions to the manuals in S3.A.3. a & b., or other stormwater management guidance documents or manuals which provide an equivalent level of pollution prevention, that are approved by Ecology and incorporated into this permit in accordance with the permit modification requirements of WAC 173-226-230. For purposes of this section, the documents listed in Appendix 10 of the August 1, 2019 Phase I Municipal Stormwater Permit are hereby incorporated into this permit; or

   iv. Documentation in the SWPPP that the BMPs selected are demonstrably equivalent to practices contained in stormwater technical manuals approved by Ecology, including the proper selection, implementation, and maintenance of all applicable and appropriate best management practices for on-site pollution control.

d. Additional Sampling Requirements and Effluent Limits for Discharges to Certain Impaired Waters and Puget Sound Sediment Cleanup Sites.

i. Permittees discharging to a 303(d)-listed waterbody (Category 5), either directly or indirectly through a stormwater drainage system, shall comply with the applicable sampling requirements and numeric effluent limits in Table 1.

For purposes of this condition, "applicable sampling requirements and effluent limits" means the sampling and effluent limits in Table 1 that correspond to the specific parameter(s) the receiving water is 303(d)-listed for at the time of permit coverage, or Total Suspended Solids (TSS) if the waterbody is 303(d)-listed (Category 5) for sediment quality at the time of MSGP coverage.

If a discharge point is subject to an impaired waterbody effluent limit for a parameter that also has a benchmark, the effluent limit supersedes the benchmark. All references to Category 5 pertain to the 2012 EPA-approved Water Quality Assessment.

The 2012 EPA-approved Water Quality Assessment may be viewed online at: http://www.ecy.wa.gov/programs/wq/links/wq_assessments.html. See *id.*

Table 1: Sampling and Effluent Limits Applicable to Discharges to 303(d)-listed Waters

Parameter	Units	Maximum Daily[a]		Analytical Method [b]	Laboratory Quantitation Level [c]	Sampling Frequency[d]
		Freshwater	Marine			
Turbidity	NTUs	25	25	EPA 180.1 Meter	0.5	1/quarter
pH	SU	[j]	Between 7.0 and 8.5	Meter	±0.1	1/quarter
Fecal Coliform Bacteria	# colonies/ 100 mL	[i]	[i]	SM 9222D	20 CFU/ 100 mL	1/quarter
TSS [f]	mg/L	30	30	SM2540-D	5	1/quarter
Phosphorus, Total	mg/L	[g]	[g]	EPA 365.1	0.01	1/quarter
Total Ammonia (as N)	mg/L	[g]	[g]	SM 4500 NH_3-GH	0.3	1/quarter
Copper, Total	µg/L	[g]	[g]	EPA 200.8	2.0	1/quarter
Lead, Total	µg/L	[g]	[g]	EPA 200.8	0.5	1/quarter
Mercury, Total	µg/L	2.1	1.8	EPA1631E	0.0005	1/quarter
Zinc, Total	µg/L	[g]	[g]	EPA 200.8	2.5	1/quarter
Pentachlorophenol	µg/L	9[h]	[g]	EPA 625	1.0	1/quarter

[a] Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. The daily discharge is the average measurement of the pollutant over the day; this does not apply to pH.

[b.] Or other equivalent method with the same reporting level.

c The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the DMR. If the Permittee is unable to obtain the required QL due to matrix effects, the Permittee must report the matrix-specific method detection level (MDL) and QL on the DMR.

d. 1/quarter means at least one sample taken each quarter, e.g., Q1 = Jan 1 – March 31, Q2 = April 1 – June 30.

e Permittees shall use either a calibrated pH meter consistent with EPA 9040 or an approved state method.

f. Permittees who discharge to a waterbody 303(d)-listed (Category 5) for sediment quality shall sample the discharge for TSS.

g. Site-specific effluent limitation will be assigned at the time of permit coverage.

h. Based on a pH of 7.0.

i. A numeric effluent limit does not apply, but Permittees must sample according to Table 1. In addition, the following mandatory BMPs shall be incorporated into the SWPPP and implemented; the Permittee must:

1) Use all known, available and reasonable methods to prevent rodents, birds, and other animals from feeding/nesting/roosting at the facility. Nothing in this section shall be construed as allowing violations of any applicable federal, state or local statutes, ordinances, or regulations including the Migratory Bird Treaty Act.

2) Perform at least one annual dry weather inspection of the stormwater system to identify and eliminate sanitary sewer cross-connections.

3) Install structural source control BMPs to address on-site activities and sources that could cause bacterial contamination (*e.g.*, dumpsters, compost piles, food waste, and animal products).

4) Implement operational source control BMPs to prevent bacterial contamination from any known sources of fecal coliform bacteria (*e.g.*, animal waste).

5) Conduct additional bacteria-related sampling and/or BMPs, if ordered by Ecology on a case-by-case basis.

j. The effluent limit for a Permittee who discharges to a freshwater body 303(d)-listed for pH is: Between 6.0 and 8.5, if the 303(d)-listing is for high pH only; Between 6.5 and 9.0, if the 303(d)-listing is for low pH only; and Between 6.5 and 8.5 if the 303(d)-listing is for both low and high pH. All pH effluent limits are applied end-of-pipe.

ii. Permittees discharging to a Puget Sound Sediment Cleanup Site[3], either directly or indirectly through a stormwater drainage system, shall comply with this section:

1) Permittees shall sample the discharge for Total Suspended Solids (TSS) in accordance with Table 2.

2) If the waterbody is listed within Category 5 (sediment medium) where the *outfall* discharges to the waterbody, the discharge is subject to the TSS numeric effluent limit in Attachment A, Table 1.

[3] **Puget Sound Sediment Cleanup Site**: means Category 4B (Sediment) portions of Budd Inlet (Inner), Commencement Bay (Inner), Commencement Bay (Outer), Dalco Passage and East Passage, Duwamish Waterway (including East and West Waterway), Eagle Harbor, Elliot Bay, Hood Canal (North), Liberty Bay, Rosario Strait, Sinclair Inlet, and Thea Foss Waterway; Category 5 (Sediment) portions of the Duwamish Waterway; Category 4A (Sediment) portions of Bellingham Bay (Inner); and the Everett/Port Gardener, Oakland Bay/Shelton Harbor, and Port Angeles Harbor sediment cleanup areas, as mapped on Ecology's ISGP website. All references to Category 4A, 4B and 5 pertain to the 2012 EPA-approved Water Quality Assessment

All references to Category 4B and 5 pertain to the 2012 EPA-approved Water Quality Assessment, available online at: http://www.ecy.wa.gov/programs/wq/links/wq_assessments.html.

3) If the waterbody is not listed within Category 5 (sediment medium) where the outfall discharges to the waterbody (*e.g.*, Category 4B, etc.), the discharge is subject to the TSS benchmark in Attachment A, Table 2. If the discharge is subject to more than one TSS benchmark value (*i.e.*, two different benchmarks), the lower benchmark supersedes the higher one. If a discharge exceeds the TSS benchmark, the Permittee shall implement corrective actions in accordance with the MSGP.

4) Permittees shall remove accumulated solids from storm drain lines (including inlets, catch basins, sumps, conveyance lines, and oil/water separators) owned or controlled by the Permittee at least once during the term of the MSGP.

   Permittees shall conduct line cleaning operations (*e.g.*, jetting, vacuuming, removal, loading, storage, and/or transport) using BMPs to prevent discharges of storm drain solids to surface waters of the state.

   Removed storm drain solids and liquids shall be disposed of in accordance with applicable laws and regulations and documented in the SWPPP.

5) Prior to removing storm drain solids according to Attachment A. Condition 2.D, Permittees shall sample and analyze storm drain solids in accordance with Table 3. Storm drain solids must be collected/sampled from a representative catch basin, sump, pipe, or other feature within the storm drain system that corresponds to the discharge point where Total Suspended Solids (TSS) samples are collected per Attachment A. Samples may be either a single grab sample or a composite sample. Samples must be representative of the storm drain solids generated and accumulated in the facility's drainage system. To the extent possible, sample locations must exclude portions of the drainage system affected by water from off-site sources (*e.g.*, run-on from off-site properties, tidal influence, backflow). See *id.*

Table 2: Benchmarks and Sampling Requirements Applicable to Discharges to Puget Sound Sediment Cleanup Sites that are not Category 5 for Sediment Quality

Parameter	Units	Benchmark Value [a]	Analytical Method	Laboratory Quantitation Level [b]	Minimum Sampling Frequency [c]
TSS	mg/L	30	SM2540-D	5	1/quarter

a. Permittees sampling more than once per quarter shall average the sample results and compare the average value to the benchmark to determine if it the discharge has exceeded the benchmark value. However, if Permittees collect more than one sample during a 24-hour period, they must first calculate the daily average of the individual grab sample results collected during that 24-hour period; then use the daily average to calculate a quarterly average.

b. The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method from 40 CFR Part 136 is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method it must report the test method and QL on the DMR. If the Permittee is unable to obtain the required QL due to matrix effects, the Permittee must report the matrix-specific method detection level (MDL) and QL on the DMR.

c. 1/quarter means at least one sample taken each quarter, year-round.

Table 3: Sampling and Analytical Procedures for Storm Drain Solids

Analyte	Method in Sediment	Quantitation Level[a]
Conventional Parameters		
Percent total solids	SM 2540G, or ASTM Method D 2216	NA
Total organic carbon	Puget Sound Estuary Protocols (PSEP 1997), or EPA 9060	0.1%
Grain size	Ecology Method Sieve and Pipette (ASTM 1997), ASTMD422, or PSEP 1986/2003	NA
Metals		
Antimony, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw[b]
Arsenic, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.1 mg/kg dw
Beryllium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Cadmium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Chromium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.5 mg/kg dw
Copper, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Lead, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Mercury, Total	EPA Method 1631E, or EPA Method 7471B	0.005 mg/kg dw
Nickel, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.1 mg/kg dw
Selenium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.5 mg/kg dw
Silver, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.1 mg/kg dw
Thallium, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	0.2 mg/kg dw
Zinc, Total	EPA Method 200.8 (ICP/MS) , EPA Method 6010 or EPA Method 6020	5.0 mg/kg dw
Organics		
PAH compounds[c]	EPA Method 8270 D	70 µg/kg dw

PCBs (aroclors), Total[d]	EPA Method 8082	10 µg/kg dw
Petroleum Hydrocarbons		
NWTPH-Dx	NWTPH-Dx	25.0-100.0 mg/kg dw

a. The Permittee shall ensure laboratory results comply with the quantitation level (QL) specified in the table. However, if an alternate method is sufficient to produce measurable results in the sample, the Permittee may use that method for analysis. If the Permittee uses an alternative method, it must report the test method and QL on the sediment monitoring report. All results shall be reported. For values below the QL, or where a QL is not specified, report results at the method detection level (MDL) from the lab and the qualifier of "U" for undetected at that concentration. If the Permittee is unable to obtain the required QL due to matrix effects, the Permittee must report the matrix-specific MDL and QL on the DMR.

b. dw = dry weight.

c. PAH compounds include: 1-methylnaphthalene, 2-methylnaphthalene, 2-chloronaphthalene, acenaphthylene, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b, k)fluoranthene, benzo(ghi)perylene, dibenzo(a,h)anthracene, dibenzofuran, carbazole, chrysene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene.

d. Total = sum of PCB aroclors 1016+1221+1232+1242+1248+1254+1260.

6) All storm drain solids sampling data shall be reported to EPA no later than the DMR due date for the reporting period in which the solids were sampled. A copy of the lab report shall be submitted to EPA. See *id.*

e. Requirements for Discharges to Waters with Applicable TMDLs

i. The Permittee shall comply with applicable TMDL determinations. Applicable TMDLs or TMDL determinations are TMDLs which have been completed by the issuance date of this permit, or which have been completed prior to the date that the Permittee's NOI is received by EPA, whichever is later. EPA will list the Permittee's requirements to comply with this condition on the letter of permit coverage.

ii. TMDL requirements associated with TMDLs completed after the issuance date of this permit only become effective if they are imposed through an administrative order issued by EPA.

iii. Where Ecology has established a TMDL wasteload allocation and sampling requirements for the Permittee's discharge, the Permittee shall comply with all requirements of the TMDL.

1) If a discharge point is subject to a TMDL-related effluent limit for a parameter that also has a benchmark, the effluent limit supersedes the benchmark.

iv. Where Ecology has established a TMDL general wasteload allocation for industrial stormwater discharges for a parameter present in the Permittee's discharge, but has not identified specific requirements, EPA will assume the Permittee's compliance with the terms and conditions of the permit complies with the approved TMDL.

v. Where Ecology has not established a TMDL wasteload allocation for industrial stormwater discharges for a parameter present in the Permittee's discharge, but has not excluded these discharges, EPA will assume the Permittee's compliance with the terms and conditions of this permit complies with the approved TMDL.

vi. Where a TMDL for a parameter present in the Permittee's discharge specifically precludes or prohibits discharges of stormwater associated with industrial activity, the Permittee is not eligible for coverage under the MSGP. See *id.*

Appendix A - Definitions, Abbreviations, and Acronyms (for the purposes of the 2021 MSGP)

A.1. DEFINITIONS

Action Area – all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. See 50 CFR 402. For the purposes of this permit and for application of Endangered Species Act requirements, the following areas are included in the definition of action area:

- The areas where stormwater discharges originate and flow from the industrial facility to the point of discharge into receiving waters. (Example: Where stormwater flows into a ditch, swale, or gully that leads to receiving waters and where listed species (such as listed amphibians) are found in the ditch, swale, or gully.)
- The areas where stormwater from industrial activities discharge into receiving waters and the areas in the immediate vicinity of the point of discharge. (Example: Where stormwater from industrial activities discharges into a stream segment that is known to harbor listed aquatic species.)
- The areas where stormwater controls will be constructed and operated, including any areas where stormwater flows to and from the stormwater controls. (Example: Where a stormwater retention pond would be built.)
- The areas upstream and/or downstream from the stormwater discharge into a stream segment that may be affected by these discharges. (Example: Where sediment discharged to a receiving stream settles downstream and impacts a breeding area of a listed aquatic species.)

Antidegradation Policy or Antidegradation Requirements – the water quality standards regulation that requires States and Tribes to establish a three-tiered antidegradation program:

1. Tier 1 maintains and protects existing uses and water quality conditions necessary to support such uses. An existing use can be established by demonstrating that fishing, swimming, or other uses have actually occurred since November 28, 1975, or that the water quality is suitable to allow such uses to occur. Where an existing use is established, it must be protected even if it is not listed in the water quality standards as a designated use. Tier 1 requirements are applicable to all surface waters.

2. Tier 2 maintains and protects "high quality" waters -- water bodies where existing conditions are better than necessary to support CWA § 101(a)(2) "fishable/swimmable" uses. Water quality can be lowered in such waters. However, state and tribal Tier 2 programs identify procedures that must be followed and questions that must be answered before a reduction in water quality can be allowed. In no case may water quality be lowered to a level which would interfere with existing or designated uses.

3. Tier 3 maintains and protects water quality in outstanding national resource waters (ONRWs). Except for certain temporary changes, water quality cannot be lowered in such waters. ONRWs generally include the highest quality waters of the United States. However, the ONRW classification also offers special protection for waters of exceptional ecological significance, i.e., those which are important, unique, or sensitive ecologically. Decisions regarding which water bodies qualify to be ONRWs are made by States and authorized Indian Tribes.

Arid Areas – areas where annual rainfall averages from 0 to 10 inches.

Best Available Technology Economically Achievable (BAT) – defined in CWA section 304(b)(2).

Best Conventional Pollutant Control Technology (BCT) – defined in CWA section 304(b)(4).

Best Practicable Control Technology Currently Available (BPT) – defined in CWA section 304(b)(1).

Bypass – the intentional diversion of waste streams from any portion of a treatment facility. See 40 CFR 122.41(m)(1)(i).

CERCLA Site (i.e., Superfund Site) – for the purposes of this permit, a site as defined in Section 101(9) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601(9), that is undergoing a remedial investigation and feasibility study, or for which a Record of Decision for remedial action has been issued in accordance with the National Contingency Plan, 40 CFR Part 300.

Co-located Industrial Activities – any industrial activities, excluding your primary industrial activity(ies), located on-site that are defined by the stormwater regulations at 122.26(b)(14)(i)-and (xi). An activity at a facility is not considered co-located if the activity, when considered separately, does not meet the description of a category of industrial activity covered by the stormwater regulations or identified by the SIC code list in Appendix D.

Confidential Business Information (CBI) – see 40 CFR Part 2 for relevant definitions of CBI: http://www.gpo.gov/fdsys/pkg/CFR-2013-title40-vol1/pdf/CFR-2013-title40-vol1-part2-subpartB.pdf.

Control Measures – refers to any stormwater control or other method (including narrative effluent limitations) used to prevent or reduce the discharge of pollutants to waters of the United States.

Corrective Action – for the purposes of the permit, any action taken, or required to be taken, to repair, modify, or replace any stormwater control used at the site; (2) clean up and dispose of spills, releases, or other deposits found on the site; and (3) remedy a permit violation.

Critical Habitat – as defined in the Endangered Species Act at 16 U.S.C. 1531 for a threatened or endangered species, (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Director – a Regional Administrator of the Environmental Protection Agency or an authorized representative. See 40 CFR 122.2.

Discharge – when used without qualification, means the "discharge of a pollutant." See 40 CFR 122.2.

Discharge of a Pollutant – any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. See 40 CFR 122.2.

Discharge Point – for the purposes of this permit, the location where collected and concentrated stormwater flows are discharged from the facility such that the first receiving waterbody into which the discharge flows, either directly or through a separate storm sewer system, is a water of the U.S.

Discharge-Related Activity – activities that cause, contribute to, or result in stormwater and allowable non-stormwater point source discharges, and measures such as the siting, construction and operation of stormwater controls to control, reduce, or prevent pollution in the discharges.

Discharge to an Impaired Water – for the purposes of this permit, a discharge to an impaired water occurs if the first water of the U.S. to which you discharge is identified by a state, tribe, or EPA as not meeting an applicable water quality standard, and requires development of a total maximum daily load (TMDL) (pursuant to Section 303(d) of the Clean Water Act), or is addressed by an EPA-approved or established TMDL, or is not in either of the above categories but the waterbody is covered by pollution control requirements that meet the requirements of 40 CFR 130.7(b)(1). For discharges that enter a separate storm sewer system prior to discharge, the water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system.

Drought-Stricken Area – for the purposes of this permit, an area in which the National Oceanic and Atmospheric Administration's U.S. Seasonal Drought Outlook indicates for the period that any of the following conditions are likely: (1) "Drought to persist or intensify", (2) "Drought ongoing, some improvement", (3) "Drought likely to improve, impacts ease", or (4) "Drought development likely". See http://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.gif.

Effective Operating Condition – for the purposes of this permit, a stormwater control is kept in effective operating condition if it has been implemented and maintained in such a manner that it is working as designed to minimize pollutant discharges.

Effluent Limitations – for the purposes of this permit, any of the Part 2requirements.

Effluent Limitations Guideline (ELG) – defined in 40 CFR § 122.2 as a regulation published by the Administrator under section 304(b) of CWA to adopt or revise effluent limitations.

Eligible – for the purposes of this permit, refers to stormwater and allowable non-stormwater discharges that are authorized for coverage under this general permit.

Endangered Species – defined in the Endangered Species Act at 16 U.S.C. 1531 as any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man.

Existing Discharger – an operator applying for coverage under this permit for discharges authorized previously under an NPDES general or individual permit.

Facility or Activity – any NPDES "point source" (including land or appurtenances thereto) that is subject to regulation under the NPDES program. See 40 CFR 122.2.

Feasible – for the purposes of this permit, feasible means technologically possible and economically practicable and achievable in light of best industry practices. EPA notes that it does not intend for any permit requirement to conflict with state water rights law.

Federal Operator – an entity that meets the definition of "Operator" in this permit and is either any department, agency or instrumentality of the executive, legislative, and judicial branches of the Federal government of the United States, or another entity, such as a private contractor, operating for any such department, agency, or instrumentality.

Green Infrastructure – the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters. See Section 502 of the Federal Water Pollution Control Act (33 U.S.C. 1362).

Hazardous Waste – for the purposes of this permit, any liquid, solid, or contained gas that contain properties that are dangerous or potentially harmful to human health or the environment. See also 40 CFR §261.2.

Hazardous Substance – defined in CERCLA section 101(14) to include: a) any substance designated pursuant to the CWA section 311(b)(2)(A); b) any element, compound, mixture, solution or substance designated pursuant to section 102 of CERCLA; c) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA); d) any toxic pollutant listed under CWA section 307(a); e) any hazardous air pollutant listed under section 112 of the Clean Air Act; and f) any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to section 7 of the Toxic Substances Control Act. See 40 CFR 302.4 for the list of such hazardous substances.

Historic Property – as defined in the National Historic Preservation Act regulations means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Impaired Water (or "Water Quality Impaired Water" or "Water Quality Limited Segment") – for the purposes of this permit, waters identified by a state, tribe, or EPA as not meeting an applicable water quality standard, and require development of a total maximum daily load (TMDL) (pursuant to Section 303(d) of the CWA), or are addressed by an EPA-approved or established TMDL, or are covered by pollution controls requirements that meet the requirements of 40 FR 130.7(b)(1). For discharges that enter a separate storm sewer system prior to discharge, the first water of the U.S. to which you discharge is the waterbody that receives the stormwater discharge from the storm sewer system.

Indian Country or Indian Country Lands – defined at 40 CFR 122.2 as:

1. All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and including rights-of-way running through the reservation;

2. All dependent Indian communities within the borders of the United States, whether within the original or subsequently acquired territory thereof, and whether within or without the limits of a State: and

3. All Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same. This definition includes all land held in trust for an Indian tribe. (18 U.S.C. 1151)

Infeasible – for the purposes of this permit, infeasible means not technologically possible or not economically practicable and achievable in light of best industry practices. EPA notes that it does not intend for any permit requirement to conflict with state water rights law.

Industrial Activity – the 10 categories of industrial activities included in the definition of "stormwater discharges associated with industrial activity" as defined in 40 CFR 122.26(b)(14)(i)-and (xi).

Industrial Stormwater – stormwater runoff from industrial activity.

Measurable Storm Event – a precipitation event that results in a measurable amount of precipitation (i.e., a storm event that results in an actual discharge) and that follows the preceding storm event by at least 72 hours (3-days). The 72-hour storm interval does not apply if you document that less than a 72-hour interval is representative for local storm events.

Minimize – for the purposes of this permit, minimize means to reduce and/or eliminate to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) – defined at 40 CFR §122.26(b)(8) as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

1. Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
2. Designed or used for collecting or conveying stormwater;
3. Which is not a combined sewer; and
4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2. See 40 CFR 122.26(b)(4) and (b)(7).

National Pollutant Discharge Elimination System (NPDES) – defined at 40 CFR §122.2 as the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of CWA. The term includes an 'approved program.'

New Discharger – a facility from which there is or may be a discharge, that did not commence the discharge of pollutants at a particular site prior to August 13, 1979, which is not a new source, and which has never received a finally effective NPDES permit for discharges at that site. See 40 CFR 122.2.

New Source – any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

- after promulgation of standards of performance under section 306 of the CWA which are applicable to such source, or

- after proposal of standards of performance in accordance with section 306 of the CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal. See 40 CFR 122.2.

New Source Performance Standards (NSPS) – technology-based standards for facilities that qualify as new sources under 40 CFR 122.2 and 40 CFR 122.29.

No Exposure – all industrial materials or activities protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. See 40 CFR 122.26(g).

Non-Stormwater Discharges – discharges that do not originate from storm events. They can include, but are not limited to, discharges of process water, air conditioner condensate, non-contact cooling water, pavement wash water, external building washdown, irrigation water, or uncontaminated ground water or spring water.

Notice of Intent (NOI) – the form (electronic or paper) required for authorization of coverage under the Multi-Sector General Permit.

Notice of Termination (NOT) – the form (electronic or paper) required for terminating coverage under the Multi-Sector General Permit.

Operator – any entity with a stormwater discharge associated with industrial activity that meets either of the following two criteria:

1. The entity has operational control over industrial activities, including the ability to make modifications to those activities; or
2. The entity has day-to-day operational control of activities at a facility necessary to ensure compliance with the permit (e.g., the entity is authorized to direct workers at a facility to carry out activities required by the permit).

Outfall – see "Discharge Point."

Permitting Authority – for the purposes of this permit, EPA, a Regional Administrator of EPA, or an authorized representative.

Person – an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof. See 40 CFR 122.2.

Point Source – any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel, or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff. See 40 CFR 122.2.

Pollutant – defined at 40 CFR §122.2. A partial listing from this definition includes: dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal and agricultural waste discharged into water. See 40 CFR 122.2.

Pollutant of Concern – a pollutant which causes or contributes to a violation of a water quality standard, including a pollutant which is identified as causing an impairment in a state's 303(d) list.

Primary Industrial Activity – includes any activities performed on-site which are (1) identified by the facility's primary SIC code and included in the descriptions of 122.26(b)(14)(ii), (iii), (vi), (viii),

or (xi); or (2) included in the narrative descriptions of 122.26(b)(14)(i), (iv), (v), (vii), or (ix). [For co-located activities covered by multiple SIC codes, it is recommended that the primary industrial determination be based on the value of receipts or revenues or, if such information is not available for a particular facility, the number of employees or production rate for each process may be compared. The operation that generates the most revenue or employs the most personnel is the operation in which the facility is primarily engaged. In situations where the vast majority of on-site activity falls within one SIC code, that activity may be the primary industrial activity.] Narrative descriptions in 40 CFR 122.26(b)(14) identified above include: (i) activities subject to stormwater effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards; (iv) hazardous waste treatment storage, or disposal facilities including those that are operating under interim status or a permit under subtitle C of the Resource Conservation and Recovery Act (RCRA); (v) landfills, land application sites and open dumps that receive or have received industrial wastes; (vii) steam electric power generating facilities; and (ix) sewage treatment works with a design flow of 1.0 mgd or more.

Qualified Personnel – qualified personnel are those who are knowledgeable in the principles and practices of industrial stormwater controls and pollution prevention, and who possess the education and ability to assess conditions at the industrial facility that could impact stormwater quality, and the education and ability to assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit.

Reportable Quantity Release – a release of a hazardous substance at or above the established legal threshold that requires emergency notification. Refer to 40 CFR Parts 110, 117, and 302 for complete definitions and reportable quantities for which notification is required.

Restricted Information – for the purposes of this permit, information that is privileged or that is otherwise protected from disclosure pursuant to applicable statutes, Executive Orders, or regulations. Such information includes, but is not limited to: classified national security information, protected critical infrastructure information, sensitive security information, and proprietary business information.

Runoff Coefficient – the fraction of total rainfall that will appear at the conveyance as runoff. See 40 CFR 122.26(b)(11).

Run-On – sources of stormwater that drain from land located upslope or upstream from the regulated facility in question.

Saline Water or Saltwater – for the purposes of this permit, a waterbody with salinity that is equal to or exceeds 10 parts per thousand 95 percent or more of the time, unless otherwise defined as a coastal or marine water by the applicable state or tribal surface water quality standards.

Semi-Arid Areas – areas where annual rainfall averages from 10 to 20 inches.

Significant Materials – includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the facility is required to report pursuant to section 313 of Title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges. See 40 CFR 122.26(b)(12).

Special Aquatic Sites – sites identified in 40 CFR 230 Subpart E. These are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized

as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region.

Spill – for the purpose of this permit, the release of a hazardous or toxic substance from its container or containment.

Stormwater – stormwater runoff, snow melt runoff, and surface runoff and drainage. See 40 CFR 122.26(b)(13).

Stormwater Controls – see "Control Measures."

Stormwater Discharges Associated with Construction Activity – as used in this permit, a discharge of pollutants in stormwater runoff from areas where land-disturbing activities (e.g., clearing, grading, or excavating) occur, or where construction materials or equipment storage or maintenance (e.g., fill piles, borrow areas, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located. See 40 CFR 122.26(b)(14)(x) and 40 CFR 122.26(b)(15).

Stormwater Discharges Associated with Industrial Activity – the discharge from any conveyance that is used for collecting and conveying stormwater and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under Part 122. For the categories of industries identified in this section, the term includes, but is not limited to, stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at part 401 of this chapter); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with stormwater drained from the above described areas. Industrial facilities include those that are federally, state, or municipally owned or operated that meet the description of the facilities listed in 40 CFR 122.26(b)(14). The term also includes those facilities designated under the provisions of 40 CFR 122.26(a)(1)(v). See 40 CFR 122.26(b)(14).

Stormwater Pollution Prevention Team – the stormwater pollution prevention team is responsible for overseeing development of the SWPPP, any modifications to it, and for implementing and maintaining stormwater control measures and taking corrective actions when required. Each member of the stormwater pollution prevention team must have ready access to either an electronic or paper copy of applicable portions of this permit, the most updated copy of your SWPPP, and other relevant documents or information that must be kept with the SWPPP. The individuals on the "Stormwater Team" must be identified in the SWPPP.

Storm Event – a precipitation event that results in a measurable amount of precipitation**.**

Threatened Species – defined in the Endangered Species Act at 16 U.S.C. 1531 as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Tier 2 Waters – for antidegradation purposes, pursuant to 40 CFR 131.12(a)(2), Tier 2 waters are characterized as having water quality that exceeds the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water.

Tier 2.5 Waters – for antidegradation purposes, Tier 2.5 waters are those waters designated by States or Tribes as requiring a level of protection equal to and above that given to Tier 2 waters, but less than that given Tier 3 waters. States have special requirements for these waters.

Tier 3 Waters – for antidegradation purposes, pursuant to 40 CFR 131.12(a)(3), Tier 3 waters are identified by states as having high quality waters constituting an Outstanding National Resource Water (ONRW), such as waters of National Parks and State Parks, wildlife refuges, and waters of exceptional recreational or ecological significance.

Total Maximum Daily Loads (TMDLs) – the sum of the individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background. If receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. (See section 303(d) of the Clean Water Act and 40 CFR 130.2 and 130.7).

Toxic Waste – see "Hazardous Materials."

Uncontaminated Discharge – a discharge that does not cause or contribute to an exceedance of applicable water quality standards.

Upset – upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond your reasonable control. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. See 40 CFR 122.41(n)(1).

Water Quality Impaired – see "Impaired Water."

Water Quality Standards – defined in 40 CFR § 131.3, and are provisions of State or Federal law which consist of a designated use or uses for the waters of the United States, water quality criteria for such waters based upon such uses, and an antidegradation policy to protect high-quality waters. Water quality standards protect the public health or welfare, enhance the quality of water and serve the purposes of the Act.

Waters of the United States – see definition at 40 CFR §122.2.

A.2. ABBREVIATIONS AND ACRONYMS

AIM – Advanced Implementation Measures

BAT – Best Available Technology Economically Achievable

BOD5 – Biochemical Oxygen Demand (5-day test)

BMP – Best Management Practice

BPJ – Best Professional Judgment

CERCLA – Comprehensive Environmental Response, Compensation and Liability Act

CGP – Construction General Permit

CFR – Code of Federal Regulations

COD – Chemical Oxygen Demand

CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 *et seq*)

CWT – Centralized Waste Treatment

DMR – Discharge Monitoring Report

ELG – Effluent Limitations Guideline

EPA – U. S. Environmental Protection Agency

ESA – Endangered Species Act

FWS – U. S. Fish and Wildlife Service

LA – Load Allocations

MGD – Million Gallons per Day

MOS – Margin of Safety

MS4 – Municipal Separate Storm Sewer System

MSGP – Multi-Sector General Permit

NAICS – North American Industry Classification System

NEPA – National Environmental Policy Act

NET – NPDES eReporting Tool

NHPA – National Historic Preservation Act

NMFS – U. S. National Marine Fisheries Service

NOI – Notice of Intent

NOE – No Exposure

NOT – Notice of Termination

NPDES – National Pollutant Discharge Elimination System

NRC – National Response Center

NRHP – National Register of Historic Places

NSPS – New Source Performance Standard

NTU – Nephelometric Turbidity Unit

OMB – U. S. Office of Management and Budget

ORW – Outstanding Resource Water

OSM – U. S. Office of Surface Mining

POTW – Publicly Owned Treatment Works

RCRA – Resource Conservation and Recovery Act

RQ – Reportable Quantity

SARA – Superfund Amendments and Reauthorization Act

SDS – Safety Data Sheet

SHPO – State Historic Preservation Officer

SIC – Standard Industrial Classification

SMCRA – Surface Mining Control and Reclamation Act

SPCC – Spill Prevention, Control, and Countermeasures

SWPPP – Stormwater Pollution Prevention Plan

THPO – Tribal Historic Preservation Officer

TMDL – Total Maximum Daily Load

TSDF – Treatment, Storage, or Disposal Facility

TSS – Total Suspended Solids

USGS – United States Geological Survey

WLA – Wasteload Allocation

WQS – Water Quality Standard

Appendix B - Standard Permit Conditions

Standard permit conditions in Appendix B are consistent with the general permit provisions required under 40 CFR 122.41.

B.1. Duty To Comply.

You must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

A. You must comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards, even if the permit has not yet been modified to incorporate the requirement.

B. Penalties for Violations of Permit Conditions: EPA and other federal agencies are required to adjust their maximum and minimum statutory civil penalty amounts through rulemaking by January 15 each year to account for inflation. EPA's annual rulemaking adjustments, codified in 40 C.F.R. § 19.4, are mandated by the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended through the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (28 U.S.C. § 2461 note). As such, the civil penalty amounts below may change in the future due to inflation. See 40 C.F.R. § 19.4 for the most up-to-date civil penalty amounts.

1. Criminal Penalties.

1.1. Negligent Violations. The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than one year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than two years, or both.

1.2. *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

1.3. *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision be subject to a fine of not more than $1,000,000 and can fined up to $2,000,000 for second or subsequent convictions.

1.4. *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

2. *Civil Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act and the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended by Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (28 U.S.C. § 2461 note), and codified at 40 CFR § 19.4.

3. *Administrative Penalties.* The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows

3.1 *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act and the Federal Civil Penalties Inflation Adjustment Act of 1990 as amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (28 U.S.C. § 2461 note), and codified at 40 CFR § 19.4.

3.2 *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act and the Federal Civil Penalties Inflation Adjustment Act of 1990, as amended by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015 (28 U.S.C. § 2461 note), and codified at 40 CFR § 19.4.

B.2. Duty to Reapply.

If you wish to continue an activity regulated by this permit after the expiration date of this permit, you must apply for and obtain authorization as required by the new permit once EPA issues it.

B.3. Need to Halt or Reduce Activity Not a Defense.

It shall not be a defense for you in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B.4. Duty to Mitigate.

You must take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

B.5. Proper Operation and Maintenance.

You must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by you to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by you only when the operation is necessary to achieve compliance with the conditions of this permit.

B.6. Permit Actions.

This permit may be modified, revoked and reissued, or terminated for cause. Your filing of a request for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

B.7. Property Rights.

This permit does not convey any property rights of any sort, or any exclusive privileges.

B.8. Duty to Provide Information.

You must furnish to EPA or an authorized representative (including an authorized contractor acting as a representative of EPA), within a reasonable time, any information which EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. You must also furnish to EPA or an authorized representative upon request, copies of records required to be kept by this permit.

B.9. Inspection and Entry.

You must allow EPA or an authorized representative (including an authorized contractor acting as a representative of EPA), upon presentation of credentials and other documents as may be required by law, to:

A. Enter upon your premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

B. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

C. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

D. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

B.10. Monitoring and Records.

A. Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the monitored activity.

B. You must retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date the permit expires or the date the permittee's authorization is terminated. This period may be extended by request of EPA at any time.

C. Records of monitoring information must include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

D. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in the permit.

E. The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

B.11. Signatory Requirements.

A. NOIs, NOTs, and NOEs must be signed as follows:

1. For a corporation: By a responsible corporate officer. For the purpose of this subsection, a responsible corporate officer means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
2. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or
3. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this subsection, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA).

B. Your SWPPP, including changes to your SWPPP to document any corrective actions or advanced implementation measures taken as required by Part 5, and any other compliance documentation required under this permit, including the Annual Report, DMRs, and inspection reports, must be signed by a person described in Appendix B, Subsection 11.A above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described in Appendix B, Subsection 11.A;

2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

3. The signed and dated written authorization is included in the SWPPP. A copy must be submitted to EPA, if requested.

C. All other changes to your SWPPP, and other compliance documentation required under Part 5.3, must be signed and dated by the person preparing the change or documentation.

D. Changes to Authorization. If an authorization under this permit is no longer accurate because the industrial facility has been purchased by a different entity, a new NOI satisfying the requirements of Part 1.3 must be submitted to EPA. See Table 1-2 in Part 1.3.3 of the permit. However, if the only change that is occurring is a change in contact information or a change in the facility's address, the operator need only make a modification to the existing NOI submitted for authorization.

E. Any person signing documents in accordance with Appendix B, Subsections 11.A or 11.B above must include the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

F. For persons signing documents electronically, in addition to meeting other applicable requirements in Appendix I, Subsection B.11, such signatures must be legally dependable with no less evidentiary value than their paper equivalent.

G. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

B.12. Reporting Requirements.

A. Planned changes. You must give notice to EPA as soon as possible, but no fewer than 30 days, of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

B. Anticipated noncompliance. You must give advance notice to EPA of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Transfers. This permit is not transferable to any person except after notice to EPA. Where a facility wants to change the name of the permittee, the original permittee (the first owner or operators) must submit a Notice of Termination pursuant to Part 1.4. The new owner or operator must submit a Notice of Intent in accordance with Part 1.3.3 and Table 1-2. See also requirements in Appendix B, Subsections 11.B and 11.D.

D. Monitoring reports. Monitoring results must be reported at the intervals specified elsewhere in this permit.

1. Pursuant to Part 7.1, all monitoring data collected pursuant to Part 4 must be submitted to EPA using EPA's online DMR system (http://www.epa.gov/netdmr/).

2. If you monitor any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or as specified in the permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the DMR.

3. Calculations for all limitations which require averaging of measurements must use an arithmetic mean. For averaging purposes, use a value of zero for any individual sample parameter, which is determined to be less than the method detection limit. For sample values that fall between the method detection level and the quantitation limit (i.e., a confirmed detection but below the level that can be reliably quantified), use a value halfway between zero and the quantitation limit.

E. Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date.

F. Twenty-four hour reporting.

1. You must report any noncompliance which may endanger health or the environment. Any information must be provided orally within 24 hours from the time you become aware of the circumstances. A written submission must also be provided within five days of the time you become aware of the circumstances. The written submission must contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

2. The following shall be included as information which must be reported within 24 hours under this paragraph.

a. Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR 122.41(m)(3)(ii))

b. Any upset which exceeds any effluent limitation in the permit

c. Violation of a maximum daily discharge limit for any numeric effluent limitation. (See 40 CFR 122.44(g).)

3. EPA may waive the written report on a case-by-case basis for reports under Appendix B, Subsection 12.F.2 if the oral report has been received within 24 hours.

G. Other noncompliance. You must report all instances of noncompliance not reported under Appendix B, Subsections 12.D, 12.E, and 12.F, at the time monitoring reports are submitted. The reports must contain the information listed in Appendix B, Subsection 12.F.

H. Other information. Where you become aware that you failed to submit any relevant facts in your NOI, or submitted incorrect information in your NOI or in any report to the Permitting Authority, you must promptly submit such facts orinformation.

B.13. Bypass.

A. Definitions.

1. Bypass means the intentional diversion of waste streams from any portion of a treatment facility See 40 CFR 122.41(m)(1)(i).

2. Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. See 40 CFR 122.41(m)(1)(ii).

B. Bypass not exceeding limitations. You may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Appendix B, Subsections 13.C and 13.D. See 40 CFR 122.41(m)(2).

C. Notice.

1. Anticipated bypass. If you know in advance of the need for a bypass, you must submit prior notice, if possible at least ten days before the date of the bypass. See 40 CFR 122.41(m)(3)(i).

2. Unanticipated bypass. You must submit notice of an unanticipated bypass as required in Appendix B, Subsection 12.F (24-hour notice). See 40 CFR 122.41(m)(3)(ii).

D. Prohibition of bypass. See 40 CFR 122.41(m)(4).

1. Bypass is prohibited, and EPA may take enforcement action against you for bypass, unless:

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

c. You submitted notices as required under Appendix B, Subsection 13.C.

2. EPA may approve an anticipated bypass, after considering its adverse effects, if EPA determines that it will meet the three conditions listed above in Appendix B, Subsection 13.D.1.

B.14. Upset.

A. Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond your reasonable control. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. See 40 CFR 122.41(n)(1).

B. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Appendix B, Subsection 14.C are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. See 40 CFR 122.41(n)(2).

C. Conditions necessary for a demonstration of upset. See 40 CFR 122.41(n)(3). A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and that you can identify the cause(s) of the upset;
2. The permitted facility was at the time being properly operated; and
3. You submitted notice of the upset as required in Appendix B, Subsection 12.F.2.b (24 hour notice).
4. You complied with any remedial measures required under Appendix B, Subsection 4.

D. Burden of proof. In any enforcement proceeding, you, as the one seeking to establish the occurrence of an upset, have the burden of proof. See 40 CFR 122.41(n)(4).

B.15. Retention of Records.

Copies of the SWPPP and all documentation required by this permit, including records of all data used to complete the NOI to be covered by this permit, must be retained for at least three years from the date that permit coverage expires or is terminated. This period may be extended by request of EPA at any time.

B.16. Reopener Clause.

A. Procedures for modification or revocation. Permit modification or revocation will be conducted according to 40 CFR §122.62, §122.63, §122.64 and §124.5. This includes reasons such as new information which was not available at the time of permit issuance and would have justified the application of different permit conditions at the time of issuance, including but not limited to any Reasonable and Prudent Alternatives or Reasonable and Prudent Measures developed in Endangered Species Act consultation, and/or future monitoring results.

B. Water quality protection. If there is evidence indicating that the stormwater discharges authorized by this permit cause, have the reasonable potential to cause or contribute to an excursion above any applicable water quality standard, you may be required to obtain an individual permit, or the permit may be modified to include different limitations and/or requirements.

C. Timing of permit modification. EPA may elect to modify the permit prior to its expiration (rather than waiting for the new permit cycle) to comply with any new statutory or regulatory requirements, such as for effluent limitation guidelines that may be promulgated in the course of the current permit cycle.

Appendix C - Areas Eligible for Permit Coverage

EPA can only provide permit coverage in these areas and for classes of discharges that are outside the scope of a state's NPDES program authorization.

C.1 EPA Region 1: Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 1:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
CTR05I000	Indian Country within the State of Connecticut
MAR050000	Commonwealth of Massachusetts, except Indian country
MAR05I000	Indian country within the Commonwealth of Massachusetts
NHR050000	State of New Hampshire
RIR05I000	Indian country within the State of Rhode Island
VTR05F000	Areas in the State of Vermont subject to industrial activity by a Federal Operator

For stormwater discharges in EPA Region 1 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.2 EPA Region 2: New Jersey, New York, Puerto Rico, Virgin Islands.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 2:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
PRR050000	Commonwealth of Puerto Rico
NYR05I000	Indian country within the State of New York, except the lands of the St. Regis Mohawk Tribe

For stormwater discharges in EPA Region 2 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.3 EPA Region 3: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 3:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
DCR050000	District of Columbia
DER05F000	Areas in the State of Delaware subject to industrial activity by a Federal Operator
VAR05I000	Indian country within the State of Virginia

For stormwater discharges in EPA Region 3 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.4 EPA Region 4: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 4:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
ALR05I000	Indian country within the State of Alabama
FLR05I000	Indian country within the State of Florida (except for facilities on the Miccosukee and Seminole Tribe lands, contact EPA Region 4 for an individual permit application)
MSR05I000	Indian country within the State of Mississippi
NCR05I000	Indian country within the State of North Carolina
SCR05I000	Indian country within the State of South Carolina

For stormwater discharges in EPA Region 4 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.5 EPA Region 5: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 5:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
MIR05I000	Indian country within the State of Michigan
MNR05I000	Indian country within the State of Minnesota
WIR05I000	Indian country within the State of Wisconsin (except for facilities on Sokaogon Chippewa Community lands and Bad River Band of Lake Superior Tribe of Chippewa Indians lands, see EPA Region 5 for an individual permit application).

For stormwater discharges in EPA Region 5 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.6 EPA Region 6: Arkansas, Louisiana, Oklahoma, Texas, and New Mexico (except see Region 9 for Navajo lands, and see Region 8 for Ute Mountain Reservation lands).

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 6:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
LAR05I000	Indian country within the State of Louisiana
NMR050000	The State of New Mexico, except Indian country

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
NMR05I000	Indian country within the State of New Mexico, except Ute Mountain Reservation lands that are covered under Colorado permit COR05I000 and Navajo Reservation lands that are covered under Arizona permit AZR05I000
OKR05I000	Indian country within the State of Oklahoma
OKR05F000	Facilities in the State of Oklahoma not under the jurisdiction of the Oklahoma Department of Environmental Quality or the Oklahoma Department of Agriculture, Food and Forestry, except those on Indian Country. EPA jurisdiction facilities include SIC Codes 1311, 1381, 1382, 1389, and 5171.
TXR05F000	Facilities in the State of Texas not under the jurisdiction of the Texas Commission on Environmental Quality, except those on Indian Country. EPA-jurisdiction facilities include SIC Codes 1311, 1321, 1381, 1382, 1389, and 5171 (other than oil field service company "home base" facilities).
TXR05I000	Indian country within the State of Texas

For stormwater discharges in EPA Region 6 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.7 EPA Region 7: Iowa, Kansas, Missouri, Nebraska (except see Region 8 for Pine Ridge Reservation Lands).

This permit offer NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 7:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
IAR05I000	Indian country within the State of Iowa
KSR05I000	Indian country within the State of Kansas
NER05I000	Indian country within the State of Nebraska, except Pine Ridge Reservation lands (see Region 8)

For stormwater discharges in EPA Region 7 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.8 EPA Region 8: Colorado, Montana, North Dakota, South Dakota, Wyoming, Utah (except see Region 9 for Goshute Reservation and Navajo Reservation Lands), the Ute Mountain Reservation in NM, and the Pine Ridge Reservation in NE.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 8:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
COR05F000	Areas in the State of Colorado, except those located on Indian country, subject to industrial activity by a Federal Operator

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
COR05I000	Indian country within the State of Colorado, as well as the portion of the Ute Mountain Reservation located in New Mexico
MTR05I000	Indian country within the State of Montana
NDR05I000	Indian country within the State of North Dakota, as well as that portion of the Standing Rock Reservation located in South Dakota (except for the portion of the lands within the former boundaries of the Lake Traverse Reservation, which is covered under South Dakota permit SDR05I000 listed below)
SDR05I000	Indian country within the State of South Dakota, as well as the portion of the Pine Ridge Reservation located in Nebraska and the portion of the lands within the former boundaries of the Lake Traverse Reservation located in North Dakota (except for the Standing Rock Reservation, which is covered under North Dakota permit NDR05I000 listed above)
UTR05I000	Indian country within the State of Utah, except Goshute and Navajo Reservation lands (see Region 9)
WYR05I000	Indian country within the State of Wyoming

For stormwater discharges in EPA Region 8 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.9 EPA Region 9: California, Hawaii, Nevada, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, the Confederated Tribes of the Goshute Reservation in Utah and Nevada, Indian Country within the State of Arizona including the Navajo Reservationin Utah and New Mexico and Arizona, the Duck Valley Reservation in Idaho, and the Fort McDermitt Reservation in Oregon.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 9:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
ASR050000	American Samoa
AZR05I000	Indian country within the State of Arizona, including Navajo Reservation lands in New Mexico and Utah
CAR05I000	Indian country within the State of California (facilities on the Hoopa Valley Reservation must contact EPA Region 9 for an individual permit)
GUR050000	Island of Guam
JAR050000	Johnston Atoll
MWR050000	Midway Island and Wake Island
MPR050000	Commonwealth of the Northern Mariana Islands
NVR05I000	Indian country within the State of Nevada, including the Duck Valley Reservation in Idaho, the Fort McDermitt Reservation in Oregon and the Confederated Tribes of the Goshute Reservation in Utah

For stormwater discharges in EPA Region 9 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

C.10 Region 10: Alaska, Idaho (except see Region 9 for Duck Valley Reservation lands), Oregon (except see Region 9 for Fort McDermitt Reservation), Washington.

This permit offers NPDES permit coverage for stormwater discharges associated with industrial activity from the following areas in EPA Region 10:

Master Permit Number	Areas of Coverage/Where EPA Is Permitting Authority
AKR05F000	Denali National Park and Preserve
AKR05I000	Indian country lands as defined in 18 U.S.C. 1151 within the State of Alaska
IDR050000	The State of Idaho, except Indian country lands
IDR05I000	Indian country lands within the State of Idaho, except Duck Valley Reservation lands, which are covered under Nevada permit NVR05I000
ORR05I000	Indian country lands within the State of Oregon, except Fort McDermitt Reservation lands, which are covered under Nevada permit NVR05I000
WAR05I000	Indian country lands within the State of Washington (facilities on the Swinomish Reservation must contact EPA Region 10 for an individual permit)
WAR05F000	Areas in the State of Washington, except those located on Indian country lands, subject to industrial activity by a Federal Operator

For stormwater discharges in EPA Region 10 outside the areas of coverage identified above, please contact your state NPDES permitting authority to obtain coverage under a state-issued NPDES permit.

Appendix D - Facilities and Activities Covered

Your permit eligibility is limited to discharges from facilities in the "sectors" of industrial activity summarized in Table D-1. These sector descriptions are based on Standard Industrial Classification (SIC) Codes and Industrial Activity Codes. References to "sectors" in this permit (e.g., sector-specific monitoring requirements) refer to these groupings.

Table D-1. Sectors of Industrial Activity Covered by This Permit		
Subsector (May be subject to more than one)	**SIC Code or Activity Code[1]**	**Activity Represented**
SECTOR A: TIMBER PRODUCTS		
A1	2421	General Sawmills and Planing Mills
A2	2491	Wood Preserving
A3	2411	Log Storage and Handling
A4	2426	Hardwood Dimension and Flooring Mills
	2429	Special Product Sawmills, Not Elsewhere Classified
	2431-2439 (except 2434)	Millwork, Veneer, Plywood, and Structural Wood (see Sector W)
	2448	Wood Pallets and Skids
	2449	Wood Containers, Not Elsewhere Classified
	2451, 2452	Wood Buildings and Mobile Homes
	2493	Reconstituted Wood Products
	2499	Wood Products, Not Elsewhere Classified
	2441	Nailed and Lock Corner Wood Boxes and Shook
SECTOR B: PAPER AND ALLIED PRODUCTS		
B1	2631	Paperboard Mills
B2	2611	Pulp Mills
	2621	Paper Mills
	2652-2657	Paperboard Containers and Boxes
	2671-2679	Converted Paper and Paperboard Products, Except Containers and Boxes
SECTOR C: CHEMICALS AND ALLIED PRODUCTS		
C1	2873-2879	Agricultural Chemicals
C2	2812-2819	Industrial Inorganic Chemicals
C3	2841-2844	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations
C4	2821-2824	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass

Table D-1. Sectors of Industrial Activity Covered by This Permit		
Subsector (May be subject to more than one)	**SIC Code or Activity Code[1]**	**Activity Represented**
C5	2833-2836	Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; in vitro and in vivo Diagnostic Substances; and Biological Products, Except Diagnostic Substances
	2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products
	2861-2869	Industrial Organic Chemicals
	2891-2899	Miscellaneous Chemical Products
	3952 (limited to list of inks and paints)	Inks and Paints, Including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors
	2911	Petroleum Refining
SECTOR D: ASPHALT PAVING AND ROOFING MATERIALS AND LUBRICANTS		
D1	2951, 2952	Asphalt Paving and Roofing Materials
D2	2992, 2999	Miscellaneous Products of Petroleum and Coal
SECTOR E: GLASS, CLAY, CEMENT, CONCRETE, AND GYPSUM PRODUCTS		
E1	3251-3259	Structural Clay Products
	3261-3269	Pottery and Related Products
E2	3271-3275	Concrete, Gypsum, and Plaster Products
E3	3211	Flat Glass
	3221, 3229	Glass and Glassware, Pressed or Blown
	3231	Glass Products Made of Purchased Glass
	3241	Hydraulic Cement
	3281	Cut Stone and Stone Products
	3291-3299	Abrasive, Asbestos, and Miscellaneous Nonmetallic Mineral Products
SECTOR F: PRIMARY METALS		
F1	3312-3317	Steel Works, Blast Furnaces, and Rolling and Finishing Mills
F2	3321-3325	Iron and Steel Foundries
F3	3351-3357	Rolling, Drawing, and Extruding of Nonferrous Metals
F4	3363-3369	Nonferrous Foundries (Castings)
F5	3331-3339	Primary Smelting and Refining of Nonferrous Metals
	3341	Secondary Smelting and Refining of Nonferrous Metals
	3398, 3399	Miscellaneous Primary Metal Products

Table D-1. Sectors of Industrial Activity Covered by This Permit		
Subsector (May be subject to more than one)	**SIC Code or Activity Code[1]**	**Activity Represented**
SECTOR G: METAL MINING (ORE MINING AND DRESSING)		
G1	1021	Copper Ore and Mining Dressing Facilities
G2	1011	Iron Ores
	1021	Copper Ores
	1031	Lead and Zinc Ores
	1041, 1044	Gold and Silver Ores
	1061	Ferroalloy Ores, Except Vanadium
	1081	Metal Mining Services
	1094, 1099	Miscellaneous Metal Ores
SECTOR H: COAL MINES AND COAL MINING-RELATED FACILITIES		
H1	1221-1241	Coal Mines and Coal Mining-Related Facilities
SECTOR I: OIL AND GAS EXTRACTION		
I1	1311	Crude Petroleum and Natural Gas
	1321	Natural Gas Liquids
	1381-1389	Oil and Gas Field Services
SECTOR J: MINERAL MINING AND DRESSING		
J1	1442	Construction Sand and Gravel
	1446	Industrial Sand
J2	1411	Dimension Stone
	1422-1429	Crushed and Broken Stone, Including Rip Rap
	1481	Nonmetallic Minerals Services, Except Fuels
	1499	Miscellaneous Nonmetallic Minerals, Except Fuels
J3	1455, 1459	Clay, Ceramic, and Refractory Materials
	1474-1479	Chemical and Fertilizer Mineral Mining
SECTOR K: HAZARDOUS WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES		
K1	HZ	Hazardous Waste Treatment, Storage, or Disposal Facilities, including those that are operating under interim status or a permit under subtitle C of RCRA
SECTOR L: LANDFILLS, LAND APPLICATION SITES, AND OPEN DUMPS		
L1	LF	All Landfill, Land Application Sites and Open Dumps
L2	LF	All Landfill, Land Application Sites and Open Dumps, except Municipal Solid Waste Landfill (MSWLF) Areas Closed in Accordance with 40 CFR 258.60
SECTOR M: AUTOMOBILE SALVAGE YARDS		
M1	5015	Automobile Salvage Yards

Table D-1. Sectors of Industrial Activity Covered by This Permit		
Subsector (May be subject to more than one)	**SIC Code or Activity Code[1]**	**Activity Represented**
SECTOR N: SCRAP RECYCLING FACILITIES		
N1	5093	Scrap Recycling and Waste Recycling Facilities except Source-Separated Recycling
N2	5093	Source-separated Recycling Facility
SECTOR O: STEAM ELECTRIC GENERATING FACILITIES		
O1	SE	Steam Electric Generating Facilities, including coal handling sites
SECTOR P: LAND TRANSPORTATION AND WAREHOUSING		
P1	4011, 4013	Railroad Transportation
	4111-4173	Local and Highway Passenger Transportation
	4212-4231	Motor Freight Transportation and Warehousing
	4311	United States Postal Service
	5171	Petroleum Bulk Stations and Terminals
SECTOR Q: WATER TRANSPORTATION		
Q1	4412-4499	Water Transportation Facilities
SECTOR R: SHIP AND BOAT BUILDING AND REPAIRING YARDS		
R1	3731, 3732	Ship and Boat Building or Repairing Yards
SECTOR S: AIR TRANSPORTATION FACILITIES		
S1	4512-4581	Air Transportation Facilities
SECTOR T: TREATMENT WORKS		
T1	TW	Treatment Works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA
SECTOR U: FOOD AND KINDRED PRODUCTS		
U1	2041-2048	Grain Mill Products
U2	2074-2079	Fats and Oils Products
U3	2011-2015	Meat Products
	2021-2026	Dairy Products

Table D-1. Sectors of Industrial Activity Covered by This Permit		
Subsector (May be subject to more than one)	**SIC Code or Activity Code[1]**	**Activity Represented**
	2032-2038	Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties
	2051-2053	Bakery Products
	2061-2068	Sugar and Confectionery Products
	2082-2087	Beverages
	2091-2099	Miscellaneous Food Preparations and Kindred Products
	2111-2141	Tobacco Products
SECTOR V: TEXTILE MILLS, APPAREL, AND OTHER FABRIC PRODUCT MANUFACTURING; LEATHER AND LEATHER PRODUCTS		
V1	2211-2299	Textile Mill Products
	2311-2399	Apparel and Other Finished Products Made from Fabrics and Similar Materials
	3131-3199	Leather and Leather Products (note: see Sector Z1 for Leather Tanning and Finishing)
SECTOR W: FURNITURE AND FIXTURES		
W1	2434	Wood Kitchen Cabinets
	2511-2599	Furniture and Fixtures
SECTOR X: PRINTING AND PUBLISHING		
X1	2711-2796	Printing, Publishing, and Allied Industries
SECTOR Y: RUBBER, MISCELLANEOUS PLASTIC PRODUCTS, AND MISCELLANEOUS MANUFACTURING INDUSTRIES		
Y1	3011	Tires and Inner Tubes
	3021	Rubber and Plastics Footwear
	3052, 3053	Gaskets, Packing and Sealing Devices, and Rubber and Plastic Hoses and Belting
	3061, 3069	Fabricated Rubber Products, Not Elsewhere Classified
Y2	3081-3089	Miscellaneous Plastics Products
	3931	Musical Instruments
	3942-3949	Dolls, Toys, Games, and Sporting and Athletic Goods
	3951-3955 (except 3952 – see Sector C)	Pens, Pencils, and Other Artists' Materials
	3961, 3965	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal
	3991-3999	Miscellaneous Manufacturing Industries

Table D-1. Sectors of Industrial Activity Covered by This Permit		
Subsector (May be subject to more than one)	**SIC Code or Activity Code[1]**	**Activity Represented**
SECTOR Z: LEATHER TANNING AND FINISHING		
Z1	3111	Leather Tanning and Finishing
SECTOR AA: FABRICATED METAL PRODUCTS		
AA1	3411-3499 (except 3479)	Fabricated Metal Products, Except Machinery and Transportation Equipment, and Coating, Engraving, and Allied Services
	3911-3915	Jewelry, Silverware, and Plated Ware
AA2	3479	Fabricated Metal Coating and Engraving
SECTOR AB: TRANSPORTATION EQUIPMENT, INDUSTRIAL OR COMMERCIAL MACHINERY		
AB1	3511-3599 (except 3571-3579)	Industrial and Commercial Machinery, Except Computer and Office Equipment (see Sector AC)
	3711-3799 (except 3731, 3732)	Transportation Equipment Except Ship and Boat Building and Repairing (see Sector R)
SECTOR AC: ELECTRONIC, ELECTRICAL, PHOTOGRAPHIC, AND OPTICAL GOODS		
AC1	3571-3579	Computer and Office Equipment
	3812-3873	Measuring, Analyzing, and Controlling Instruments; Photographic and Optical Goods, Watches, and Clocks
	3612-3699	Electronic and Electrical Equipment and Components, Except Computer Equipment
SECTOR AD: NON-CLASSIFIED FACILITIES		
AD1	Other stormwater discharges designated by the Director as needing a permit (see 40 CFR 122.26(a)(9)(i)(C) & (D)) or any facility discharging stormwater associated with industrial activity not described by any of Sectors A-AC. NOTE: Facilities may not elect to be covered under Sector AD. Only the Director may assign a facility to Sector AD.	

[1] A complete list of SIC Codes (and conversions from the newer North American Industry Classification System" (NAICS)) can be obtained from the Internet at www.census.gov/epcd/www/naics.html or in paper form from various locations in the document titled *Handbook of Standard Industrial Classifications*, Office of Management and Budget, 1987.

Appendix E - Procedures Relating to Endangered Species Protection

E.1 Assessing the Effects of Your Discharges and Discharge-Related Activities

In accordance with Part 1.1.4, you must follow the procedures in this appendix to determine which of the eligibility criteria (i.e., criterion A - E) you qualify under, if any, with respect to the protection of threatened or endangered species listed, and "critical habitat" designated, under the federal Endangered Species Act (ESA). If you do not meet one of these criteria, you are not eligible for coverage under this permit.

The procedures in this appendix will help you assess the potential effects of applicable stormwater discharges, discharge-related activities, and authorized non-stormwater discharges on federally listed threatened and endangered species and their designated critical habitat. In accordance with Part 6.2.6.1 of this permit, you must keep any documentation that supports your eligibility criteria determination, including the completed *Criterion Selection Worksheet* in Part E.4 of this appendix, with your Stormwater Pollution Prevention Plan (SWPPP).

You must complete your eligibility determination outlined in the Endangered Species Protection section of the Notice of Intent (NOI) in the NPDES eReporting Tool (NeT-MSGP) and provide all information as required on your NOI that supports the Part 1.1.4 eligibility criterion you qualify under. Note that if you have determined that you may be eligible under Criterion C3 or Criterion F, you must complete additional questions in the Endangered Species Protection section of the NOI in NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you must submit a completed *Criterion C3 Eligibility Form* to EPA a minimum of 30 days prior to submitting your NOI for permit coverage.

While coordination between you and the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS)(together, the "Services") is not necessarily required in all cases, EPA encourages you to coordinate with the Services, to document that coordination, and to do so early in the planning process prior to submitting your NOI.

When evaluating the potential effects of your activities, you must consider effects to listed species or critical habitats within the "action area" of your industrial activity, as identified by the USFWS IPaC and/or the NOAA Species Directory (see Part E.4 of this appendix). Action area is defined in Appendix A of the MSGP and below:

> **Action Area** – all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. See 50 CFR 402. For the purposes of this permit and for application of Endangered Species Act requirements, the following areas are included in the definition of action area:
>
> - The areas where stormwater discharges originate and flow from the industrial facility to the point of discharge into receiving waters. (Example: Where stormwater flows into a ditch, swale, or gully that leads to receiving waters and where listed species (such as listed amphibians) are found in the ditch, swale, or gully.)
>
> - The areas where stormwater from industrial activities discharge into receiving waters and the areas in the immediate vicinity of the point of discharge. (Example: Where stormwater from industrial activities discharges into a stream segment that is known to harbor listed aquatic species.)

• The areas where stormwater controls will be constructed and operated, including any areas where stormwater flows to and from the stormwater controls. (Example: Where a stormwater retention pond would be built.)

• The areas upstream and/or downstream from the stormwater discharge into a stream segment that may be affected by these discharges. (Example: Where sediment discharged to a receiving stream settles downstream and impacts a breeding area of a listed aquatic species.)

E.2 Eligibility Criterion

As required by Part 1.1.4, you must certify in your NOI that you meet one of the following criteria (A - E) to be eligible for coverage under the permit. Once you determine the applicable eligibility criterion, you must:

- Specify the basis for your selection of the applicable eligibility criterion, and if required, provide documentation that is the basis for your determination with the NOI form; and
- Provide documentation in your SWPPP that is sufficient to support your determination that you satisfy the requirements of the applicable criterion.

NOTE: You must use the information from the USFWS IPaC and NOAA Species Directory (see Part E.4 of this appendix, Step 2 and 3) when determining the presence of ESA listed species and critical habitat. Attaching aerial image(s) of the site to this NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.

Criterion A. **No ESA-listed species and/or critical habitat present in action area.** No ESA-listed species and designated critical habitat(s) are likely to occur in your facility's "action area" as defined in Appendix A. You must provide a description below of the basis for selecting this criterion and provide documentation supporting your eligibility determination in your SWPPP.

Basis statement content: A basis statement supporting the selection of this criterion must identify the USFWS and NMFS information sources used. State resources are not acceptable. Attaching aerial image(s) of the site to this NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Note that NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.

Criterion B. **Eligibility requirements met by another operator under the 2021 MSGP.** Your industrial activity's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility criteria A, C, D, or E of the 2021 MSGP and you have confirmed that no additional ESA-listed species and designated critical habitat not considered in that certification may be present or located in the "action area" (e.g., due to a new species listing or critical habitat designation). To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other 2021 MSGP operator's certification. By certifying eligibility under this criterion, you must comply with any conditions upon which the other operator's certification was based. You must include in your NOI the NPDES ID assigned to the other 2021 MSGP operator's authorization under this permit. If your certification is based on another 2021 MSGP operator's certification under

criterion C, you must provide EPA with the relevant supporting information required (i.e., permit tracking number, industrial activity SWPPP, a description of the basis for the criterion selected) in your NOI form.

Basis statement content: A basis statement supporting the selection of this criterion must identify the eligibility criterion of the other MSGP NOI, the authorization date, and confirmation that the authorization is effective.

Criterion C1. **Facility eligible for Criterion C in the 2015 MSGP with NO CHANGE to listed species, critical habitat, or action area.** Your facility was eligible for Criterion C in the 2015 MSGP and there has been no change in your facility's action area and you have confirmed that there are no additional threatened or endangered species or designated critical habitat listed by USFWS and/or NMFS in your action area since your certification under Criterion C in the 2015 MSGP. You must provide a description of the basis of this criterion selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP.

Basis statement content: A basis statement supporting the selection of this criterion must provide the USFWS and/or NMFS resources consulted that helped you determine that there are no additional and/or critical habitat listed by under the jurisdiction of the Services in your action area.

Criterion C2. **Facility eligible for Criterion C in the 2015 MSGP with CHANGES to listed species, critical habitat, or action area.** Your facility was eligible for Criterion C in the 2015 MSGP, but there have been changes in your facility's action area, and/or additional threatened or endangered species and/or designated critical habitat have been listed by USFWS and/or NMFS in your action area since your certification under Criterion C under the 2015 MSGP. You must provide a description of the basis of this criterion selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP. You must submit your completed Criterion C2 Eligibility information at the same time that you submit your NOI, which will be held for 30 additional days prior to the standard 30-day review for all NOIs.

Basis statement content: A basis statement supporting the selection of this criterion must identify the following:

1. A description of the changes in the facility's action area (if applicable).
2. The USFWS and/or NMFS resources consulted that helped you determine that additional species and/or critical habitat have been listed/designated by either of the Services in your action area.
3. What ESA-listed species and/or designated critical habitat are located in your "action area".
4. Distance in miles between your site and the ESA-listed species and/or designated critical habitat within the action area (in miles, or state "on site" if the ESA-listed species and/or designated critical habitat is within the area to be disturbed).

5. A description of EPA approved measures you will implement or will continue to implement to ensure no likely adverse effects on ESA-listed species and/or critical habitat.

Criterion C3. **ESA-listed species and/or designated critical habitat likely to occur, but discharges not likely to adversely affect them.** ESA-listed threatened or endangered species or their designated critical habitat(s) under the jurisdiction of USFWS and/or NMFS are likely to occur in or near your facility's "action area," and you certify to EPA that your industrial activity's discharges and discharge-related activities are not likely to adversely affect ESA-listed and/or critical habitat. To certify your eligibility under this criterion, you must complete the Criterion C3 Eligibility Form, which you must complete additional questions in the Endangered Species Protection section of the NOI in NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you must submit to EPA at least 30 days prior to filing your NOI for permit coverage. After evaluation of your Criterion C3 Eligibility Form, EPA may require additional measures that you must implement to avoid or eliminate likely adverse effects on ESA-listed species and/or critical habitat from discharges and discharge-related activities. You must submit your completed Criterion C3 Eligibility information at the same time that you submit your NOI, which will be held for 30 additional days prior to the standard 30-day review for all NOIs. You must also provide a description of the basis for the criterion you selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP.

Basis statement content: A basis statement supporting the selection of this criterion must identify the following:

1. The USFWS and NMFS information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.

2. What ESA-listed species and/or designated critical habitat are located in your "action area".

3. Distance in miles between your site and the ESA-listed species and/or designated critical habitat within the action area (in miles, or state "on site" if the ESA-listed species and/or designated critical habitat is within the area to be disturbed).

4. A description of EPA approved measures you will implement to ensure no likely adverse effects on ESA-listed species and/or critical habitat.

5. A statement affirming that "I agree to implement any additional measures that were determined by EPA to be necessary to ensure that my discharges and/or discharge-related activities will not have likely adverse effects on listed species and critical habitat."

6. If the EPA Regional Office granted you a waiver from electronic reporting, date you sent completed Criterion C3 Eligibility form to EPA.

Criterion D. **ESA Section 7 consultation has successfully concluded**. Consultation between a Federal Agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the Endangered Species Act has concluded. The consultation must have addressed the effects of the facility's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, indicate the result of the consultation:

i. A biological opinion and/or conference opinion that concludes that the action in question (taking into account the effects of your facility's discharges and discharge-related activities) is not likely to jeopardize the continued existence of ESA-listed species, or result in the destruction or adverse modification of designated critical habitat; or

ii. Written concurrence from the applicable Service(s) with a finding that your facility's discharges and discharge-related activities are not likely to adversely affect ESA-listed species or designated critical habitat.

You must verify that the consultation does not warrant reinitiation under 50 CFR §402.16. If reinitiation of consultation is required, in order to be eligible under this criterion you must ensure consultation is reinitiated and the result of the consultation must be consistent with Criterion D (i), or (ii) above.

If eligible under Criterion D, you must also provide supporting documentation for your determination in your NOI and SWPPP, including the Biological Opinion (or ECO tracking number) or concurrence letter. You must include copies of the correspondence between yourself and the USFWS and/or NMFS in your SWPPP and your NOI.

Basis statement content: A basis statement supporting the selection of this criterion should identify the federal action agency(ies) involved, the field office/regional office(s) providing that consultation, any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, ECO number), and the date the consultation was completed.

Criterion E. **Issuance of section 10 permit.** Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the facility's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.

Basis statement content: A basis statement supporting the selection of this criterion should identify whether USFWS or NMFS or both agencies provided a section 10 permit, the field office/regional office(s) providing permit(s), any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, ECO number), and the date the permit was granted.

E.3 Eligibility Compliance

You must comply with any measures that formed the basis of your eligibility determination in Part 1.1.4 for the duration of your coverage under the MSGP in order to maintain your eligibility for coverage under the permit. These measures become permit requirements per Part 2.3. Documentation of these measures must be kept as part of your SWPPP (see Part 6.2.6.1).

E.4 Criterion Selection Worksheet

Instructions:

You must follow the step-by-step instructions in this worksheet in order to determine your eligibility under the Part 1.1.4. Alternatively, if you prefer to use a Biological Evaluation (or its equivalent) in making a determination of your eligibility, you should ensure all of the information requested below for the criterion you are selecting is fully addressed in the document and provided. You must attach this completed document or Biological Evaluation (or equivalent) to your SWPPP to support your Part 1.1.4 eligibility determination.

You may need the following information in order to determine your eligibility:

1) Your facility's draft Stormwater Pollution Prevention Plan (SWPPP), including information on receiving waters.

2) Any additional site-specific information related to your facility's discharges and discharge-related activities, such as the geographic location.

3) The list(s) of threatened and endangered species and/or any designated critical habitat in your action area, as acquired from the Fish and Wildlife Service and/or the National Marine Fisheries Service. Directions on how to acquire species lists is described in a subsequent section below.

Note that much of the information needed to complete this worksheet is also needed in order to prepare your NOI for permit coverage and is information that is part of your SWPPP. You may copy and paste any information that is already required and completed in your SWPPP into this worksheet. (*You may also decide to make minor changes or additions to your SWPPP while filling out the worksheet for clarification purposes or to address any concerns that are identified below.)*

STEP 1: DETERMINE IF YOU MEET THE ELIGIBILITY REQUIREMENTS OF CRITERION B, D, or E.

I. You should first determine whether you are eligible under criterion B (because another operator has accounted for your action area in their valid certification of eligibility under the 2021 MSGP), criterion D (because of a previously completed ESA section 7 consultation), or criterion E (because of a previously issued ESA section 10 permit).

II. If you determine that your facility does not meet criterion B, D, or E (e.g., due to difference in action area described, lack of analysis of appropriate effects, new listings or designation of critical habitat), proceed to **Step 2** below.

Criterion B Eligibility Requirements

If your industrial activities were already addressed in another operator's valid certification of eligibility under the current 2021 MSGP, you may be eligible for coverage under criterion B. In order to be eligible for coverage under criterion B, you must confirm that **all** three of the following are true:

- ☐ You have confirmed that the other operator's certification of eligibility accounted for your action area and that the eligibility determination was valid.
- ☐ There has been no lapse of NPDES permit coverage in the other operator's certification.

☐ You will comply with all measures that formed the basis of the other operator's valid certification of eligibility. Provide the operator's NPDES permit number and list any measures that you must comply with in the box below (or enter "N/A" if none exist):

- **If all three of the above are true, you may select criterion B on your NOI.** You must include in your NOI the NPDES ID assigned to the other operator's authorization under this permit, and a description of the basis for the criterion selected on your NOI form, including the eligibility criterion selected in the other operator's NOI. You must include this completed Worksheet in your SWPPP.
- **If any of the above are not true, you may not select criterion B and must proceed to Step 2.** For example, if there are any listed species in your action area that were not addressed in the other operator's certification, you are not eligible under criterion B.

Criterion D Eligibility Requirements

If consultation under section 7 of the ESA has concluded, you may be eligible for coverage under criterion D. In order to be eligible for coverage under criterion D, you must confirm that **all** two of the following are true:

☐ A consultation between a federal agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the ESA has concluded. Consultations can be either formal or informal, and would have occurred only as a result of a separate federal action (e.g., during application for an individual wastewater discharge permit or the issuance of a wetlands dredge and fill permit), and the consultation must have addressed the effects of your industrial activity's discharges and discharge-related activities on all ESA-listed threatened or endangered species and all designated critical habitat in your action area. The result of this consultation must be either:

i. A biological opinion currently in effect that concludes that the action in question (taking into account the effects of your facility's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The biological opinion must have included the effects of your facility's discharges[1] and discharge-related activities on all the listed species and designated critical habitat in your action area. To be eligible under (i), any

[1] Effects of discharge includes, but is not limited to, the analysis of the hydrological, chemical, and biological effects of the discharge on listed species, their prey, and their habitat, as well as critical habitat, where designated. For example, the effects analysis would have evaluated whether the various pollutants in the discharge (e.g., TSS, metals) would adversely affect listed species through exposure to the pollutants, or to their prey or habitat. Effects that look only at short-term effects unrelated to the stormwater discharge effects to listed species are not sufficient for these purposes.

reasonable and prudent measures specified in the incidental take statement must be implemented;

ii. Written concurrence (e.g., letter of concurrence) from the applicable Service(s) with a finding that your facility's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. The concurrence letter must have included the effects of your facility's discharges and discharge-related activities on all the ESA-listed species and/or designated critical habitat on your species list(s) acquired from the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service as part of this worksheet.

☐ The consultation does not warrant reinitiation under 50 CFR §402.16; or, if reinitiation of consultation is required (e.g., due to a new species listing or critical habitat designation; new information), you have reinitiated the consultation and the result of the consultation is consistent with the statements above. Attach a copy of any reinitiation documentation from the Services or other consulting federal agency.

- **If both of the above are true, you may select criterion D on your NOI.** You must also provide a description of the basis for the criterion selected on your NOI form and you must include this completed worksheet in your SWPPP. In both your SWPPP and NOI you must also provide the Biological Opinion (or ECO tracking number) or concurrence letter and any other documentation supporting your eligibility determination.
- **If any of the above are not true, you may not select criterion D and must proceed to Step 2.** For example, if the biological opinion or written concurrence did not include the effects of the discharge or discharge-related activities as described above (e.g., the previous consultation covered some but not all of the species or critical habitat in your action area as shown on your species list), or if the consultation is no longer valid (e.g., due to new species listings), you are not eligible under criterion D.

Criterion E Eligibility Requirements

If your industrial activities are the subject of a permit under section 10 of the ESA, and this authorization addresses the effects of your facility's discharges and discharge-related activities on ESA-listed species and designated critical habitat in your action area, you may be eligible for coverage under criterion E. In order to be eligible or coverage under criterion E, you must confirm that the following is true:

☐ A permit has been issued under section 10 of the ESA. The permit authorization specifically addresses the effects of your facility's discharges and discharge-related activities (if applicable) on all federally-listed species and designated critical habitat in your action area.

- **If the above is true, you may select criterion E on your NOI.** You must also provide a description of the basis for the criterion selected on your NOI form and must include this completed worksheet in your SWPPP. In both your SWPPP and your NOI you must provide a copy of the section 10 permit issued by the Services.
- **If the above is not true, you may not select criterion E and must proceed to Step 2.** For example, if a permit has been issued under section 10 of the ESA, but the permit authorization did not address the effects of your facility's discharges and/or discharge-related activities on all federally-listed species and designated critical

habitat in your action area, you are not eligible under criterion E, but you should attach a copy of the permit to the SWPPP for reference.

E.5 STEP 2: DETERMINE THE EXTENT OF YOUR ACTION AREA

You must determine whether species listed as either threatened or endangered, or their critical habitat(s) are located in your facility's action area (i.e., all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action, including areas beyond the footprint of the facility that are likely to be affected by stormwater discharges, discharge-related activities, and authorized non-stormwater discharges). Consider the following in determining the action area for your facility:

- Discharges of pollutants into downstream areas can expand the action area well beyond the footprint of your facility and the discharge point(s). Take into account the controls you will be implementing to minimize pollutants and the receiving waterbody characteristics (e.g., perennial, intermittent, ephemeral) in determining the extent of physical, chemical, and/or biotic effects of the discharges. All receiving waterbodies that could receive pollutants from your facility must be included in your action area.
- Discharge-related activities must also be accounted for in determining your action area. Discharge-related activities are any activities that cause, contribute to, or result in stormwater and authorized non-stormwater point source discharges, and measures such as the siting, construction, and operation of stormwater controls to control, reduce, or prevent pollutants from being discharged. For example, any new or modified stormwater controls that will have noise or other similar effects, and any disturbances associated with construction of controls, are part of your action area.

If you have any questions about determining the extent of your action area, you may contact EPA or the Services for assistance.https://www.epa.gov/npdes/contact-us-stormwater#regional

You must include a **map and a written description of** the action area of your facility in Attachment 1 of this appendix. You may choose to include the map that is generated from the FWS' on-line mapping tool IPaC (the *Information, Planning, and Consultation System*) located at http://ecos.fws.gov/ipac/ (see Step 3 for information about using this tool).

You must proceed to **Step 3** below.

E.6 STEP 3: DETERMINE IF LISTED THREATENED OR ENDANGERED SPECIES AND/OR CRITICAL HABITAT ARE PRESENT IN YOUR ACTION AREA.

You must determine whether species listed as either threatened or endangered under the Endangered Species Act, and/or their designated critical habitat(s) (as defined in Appendix A), are located in your facility's action area. ESA listed species and designated critical habitat are under the purview of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS), and in many cases, you will need to acquire species and critical habitat lists from both Services.

- For NMFS species and critical habitat information, use the following webpages, which provide up-to-date information on listed species

  (https://www.fisheries.noaa.gov/species-directory/threatened-endangered) and critical habitat https://www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat. To determine the field office that corresponds to your facility, go to https://www.fisheries.noaa.gov/regions. Choose the Region where the project is based from the left-hand column and the office from the About Us on the right-hand column.

If the action area includes coastal waters or waters used by species that migrate between fresh and salt waters (e.g., salmon, sturgeon), you must obtain a species list from NMFS field office.

- For FWS species information, use the on-line mapping tool IPaC (the *Information, Planning, and Consultation System*) located at http://ecos.fws.gov/ipac/, and follow these steps:
    - *Select Get Started*.
    - **Search or zoom to find your location:** Use an address, city name or other location to find your facility then use the zoom in/out feature to see the entire extent of your action area on the screen..
    - **Define you action area:** Use one of the mapping features (e.g., sketch, polygon or line drawing tool) to draw your entire action area.
        - For the aquatic portion of your action area, trace the waterbody(ies) with the tool to characterize your action area.
        - If your proposal will include any upland activities (i.e., discharge-related activities), or if there is some aspect of your discharge that would potentially result in effects to terrestrial species, include the corresponding upland areas within your action area.
        - When you are done, go to confirm and press *Continue.*
    - Select *Define Project* to request an Official Species List
    - Complete the fields on the Official Species List Request page and include "(MSGP)" at the end of the project description.
        - For Classification, select "Water Quality Modification".
        - Select the appropriate requesting agency/organization type (for most operators, this should be "Other").
    - Submit the request to acquire an Official Species List, which should show both listed species as well as any designated critical habitat that are present in the action area in the previous step.
    - Note: *If a link to an Official Species List is not available on the page, follow the web link of the office(s) indicated, or contact the office directly by mail or phone if a web link is not shown*.

The principle authority for critical habitat designations and associated requirements is found at 50 CFR Parts 17 and 226.

Attach a copy of the species and critical habitat list(s) from the Service(s) to Attachment 2 of this appendix and use the list(s) to complete the rest of this worksheet. For FWS species, include the full printout from your IPaC query/Official Species List in Attachment 2. You can include the map from your IPaC query in Attachment 1. For NMFS species, include the full printout from the Species Directory with the correct Region selected.

If after following the steps you have determined that there are no listed species and/or designated critical habitat in your action area, you may be eligible for coverage under criterion A.

If you have determined that there are or may be listed species and/or designated critical habitat in your action area, you are not eligible under criterion A and must proceed to **Step 4** below.

Criterion A Eligibility Requirements

In order to be eligible for coverage under criterion A, you must confirm that the following is true:

☐ I have confirmed there to be no ESA-listed species and no critical habitat in my action area.

- **If the above is true, you may select criterion A on your NOI form.** You must also provide a description of the basis for the criterion selected on your NOI form. You must include this completed worksheet in your SWPPP. *Note: If your Official Species List from the USFWS indicated no species or critical habitat were present in your action area, include the full consultation tracking code at the top of your Official Species List in your NOI in the basis statement for Criterion A. If an Official Species List was not available on IPaC, list the contact date and name of the Service staff with whom you corresponded to verify no USFWS species or critical habitat were present in your action area.*

Note: For existing dischargers that have previously obtained coverage under criterion A, you must verify whether ESA-protected species and/or critical habitat are expected to exist in your action area, as described above. Please note that if you now find that your action area overlaps with ESA-protected species or critical habitat, you must proceed to Step 4.

- If the above is not true, you may not select criterion A and must proceed to **Step 4** to determine if you can become eligible under criterion C.

STEP 4: DETERMINE IF YOUR INDUSTRIAL FACILITY'S DISCHARGES OR DISCHARGE-RELATED ACTIVITIES ARE LIKELY TO ADVERSELY AFFECT LISTED THREATENED OR ENDANGERED SPECIES OR DESIGNATED CRITICAL HABITAT AND ANY MEASURES THAT MUST BE IMPLEMENTED TO AVOID ADVERSE EFFECTS

If in Step 3 you determined that listed species and/or designated critical habitat could exist in your action area, you must next assess whether your discharges and discharge-related activities are likely to adversely affect ESA-listed threatened or endangered species or designated critical habitat, and whether any additional measures are necessary to ensure no likely adverse effects. In order to make a determination of your facility's likelihood of adverse effects, you must complete additional questions in the Endangered Species Protection section of the NOI in NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you must complete the attached *Criterion C3 Eligibility Form* and must submit this form to EPA a minimum of 30 days prior to filing your NOI for permit coverage. After you submit your NOI containing Criterion C3 information or your *Criterion C3 Eligibility Form*, you may be contacted by EPA with additional measures that you must implement in order to ensure your eligibility under criterion C3.

Criterion C3 Eligibility Form

Instructions:

In order to be eligible for coverage under criterion C3, **you must complete the Endangered Species Protection section of the Notice of Intent in the NPDES eReporting Tool (NeT-MSGP)**. Per Part 7.1, you must submit your NOI electronically via NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you may use this paper Criterion C3 form. If using the paper form, you must complete the following form and you must submit it to EPA following the instructions in Section VII a **minimum of 30 days prior to filing your NOI for permit coverage.** After you submit your form, you may be contacted by EPA with additional measures (e.g., additional stormwater controls or modifications to your discharge- related activities) that you must implement in order to ensure your eligibility under criterion C3.

If after completing this worksheet you cannot make a determination that your discharges and discharge-related activities are not likely to adversely affect ESA listed threatened or endangered species or designated critical habitat, you must submit this completed worksheet to EPA, and you may not file your NOI for permit coverage until you receive a determination from EPA that your discharges and/or discharge-related activities are not likely to adversely affect ESA-protected species and critical habitat.

Note: Much of the information needed for this form can be obtained from your draft SWPPP which will be needed when you file your NOI.

SECTION I. OPERATOR, FACILITY, AND SITE LOCATION INFORMATION.

1) **Operator Information**

   a) **Operator Name:** _____

   b) **Point of Contact**

   First Name:_____ **Last Name:** _____

   Phone Number: _____

   E-mail: _____

2) **Facility Information**

   a) **Facility Name:** _____

   b) **Check which of the following applies:**

☐ I am seeking coverage under the MSGP as a new discharger or as a new source

☐ I am seeking coverage under the MSGP as an existing discharger and my facility has modifications to its discharge characteristics (e.g., changes in discharge flow or area drained, different pollutants) and/or discharge-related activities (e.g., stormwater controls)

Indicate the number of years the facility has been in operation:_____years

Provide your NPDES ID (i.e., permit tracking number) from your previous MSGP coverage: _____

☐ I am seeking coverage under the MSGP as an existing discharger and there are no modifications to my facility.

Indicate the number of year(s) the facility has been in operation: _____ year(s)

Provide your NPDES ID (i.e., permit tracking number) from your previous MSGP coverage: _____

c) Facility Address:

Address 1: _____

Address 2: _____

City: _____ **State:** _____ **Zip Code:** _____

d) Identify the primary industrial sector to be covered under the 2021 MSGP:

SIC Code _____ or Primary Activity Code _____

Sector _____ and Subsector _____

e) Identify the sectors of any co-located activities to be covered under the 2021 MSGP:

Sector _____ Subsector _____

Sector _____ Subsector _____

Sector _____ Subsector _____

Sector _____ Subsector _____

Sector _____ Subsector _____

Sector _____ Subsector _____

f) Estimated area of industrial activity exposed to stormwater: _ acres

g) Provide a general description of the industrial activities that are taking place at this facility:

3) Receiving Waters Information

List all the stormwater outfalls from your facility.				For each outfall, provide the following receiving water information:	
Discharge Point ID	**Design Capacity (if known)**	**Latitude (decimal degrees)**	**Longitude (decimal degrees)**	**Name of the receiving water that receives stormwater from the discharge point and/or from the MS4 that the discharge point discharges to**	**Type of Waterbody (e.g., lake, pond, river/stream/creek, estuarine/marine water)**
		___.____	___.____		
		___.____	___.____		
		___.____	___.____		
		___.____	___.____		
		___.____	___.____		

SECTION II. ACTION AREA

As required in Step 2 of Section E.4 of Appendix E, You must include a map and a written description of the action area of your facility in Attachment 1 of this appendix.

SECTION III. LISTED SPECIES AND CRITICAL HABITAT LIST

As required in Step 3 of Section E.4 of Appendix E., attach a copy of the species and critical habitat list(s) from the Service(s) to Attachment 2 of this appendix and use the list(s) to complete the rest of this worksheet. For FWS species, include the full printout from your IPaC query/Official Species List in Attachment 2. You can include the map from your IPaC query in Attachment 1.

Review your species list in Attachment 2, choose one of the following three statements, and follow the corresponding instructions:

Note: For the purposes of this permit, "terrestrial species" would not include animal or plant species that 1) spends any portion of its life cycle in a waterbody or wetland, or 2) if an animal, depends on prey or habitat that occurs in a waterbody or wetland. For example, shorebirds, wading birds, amphibians, and certain reptiles would not be considered terrestrial species under this definition. Please also be aware that some terrestrial animals (e.g., certain insects, amphibians) may have an aquatic egg or larval/juvenile phase.

☐ The species list includes only terrestrial species and/or their designated critical habitat. No aquatic or aquatic- dependent species or their critical habitat are present in the action area. **You may skip to Section IV of this form. You are not required to fill out Section V.**

☐ The species list includes only aquatic and/or aquatic-dependent species and/or their designated critical habitat. No terrestrial species or their critical habitat are present in the action area. **You may skip to Section V of this form and are not required to fill out Section IV.**

☐ The species list includes both terrestrial and aquatic or aquatic-dependent species and/or their designated critical habitat. **You must fill out both Sections IV and V of this form.**

SECTION IV. EVALUATION OF DISCHARGE-RELATED ACTIVITIES EFFECTS

Note: You are only required to fill out this section if your facility's action area contains terrestrial species and/or their designated critical habitat. If your action area only contains aquatic and/or aquatic-dependent species and/or their designated critical habitat, you can skip directly to Section V.

Most of the potential effects related to coverage under the MSGP are assumed to occur to aquatic and/or aquatic-dependent species. However, in some cases, potential effects to terrestrial species and/or their critical habitat should be considered as well from any discharge-related activities that occur during coverage under the MSGP. Examples of discharge-related activities that could have potential effects on listed terrestrial species or their critical habitat include the storage of materials and land disturbances associated with stormwater management-related activities (e.g., the installation or placement of stormwater control measures).

A. Select the applicable statement(s) below and follow the corresponding instructions:

☐ There are no discharge-related activities that are planned to occur during my coverage under the 2021 MSGP. You can conclude that your discharge-related activities will have no likely adverse effects, and:

- If there are any aquatic or aquatic-dependent species and/or their critical habitat in your action area, you must skip to Section V, *Evaluation of Discharge Effects,* below.
- If there are no aquatic or aquatic-dependent species, you may skip to Section VI and verify that your activities will have no likely adverse effects. You must submit this form to EPA as specified in Section VII of this form. You may select criterion C on your NOI form and may submit your NOI for permit coverage 30 days after you have submitted this *Criterion C Eligibility Form*. You must also provide a description of the basis for the criterion you selected on your NOI form, **including the species and critical habitat list(s) in your action area**, as well as any other documentation supporting your eligibility. You must also include this completed *Criterion C Eligibility Form* in your SWPPP.

☐ There are discharge-related activities planned as part of the proposal. Describe your discharge- related activities in the following box and continue to (b) below.

B. In order to ensure any discharge-related activities will have no likely adverse effects on ESA-listed threatened and endangered species and/or their designated critical habitat, you must certify that all the following are true:

☐ Discharge-related activities will occur:

- on previously cleared/developed areas of the site where maintenance and operation of the facility are currently occurring or where existing conditions of the area(s) in which the discharge-related activities will occur precludes its use by listed species (e.g., work on existing impervious surfaces, work occurring inside buildings, area is not used by species), and
- if discharge-related activities will include the establishment of structures (including, but not limited to, infiltration ponds and other controls) or any related disturbances, these structures and/or disturbances will be sited in areas that will not result in isolation or degradation of nesting, breeding, or foraging habitat or other habitat functions for listed animal species (or their designated critical habitat), and will avoid the destruction of native vegetation (including listed plant species).

☐ If vegetation removal (e.g., brush clearing) or other similar activities will occur, no terrestrial listed species that use these areas for habitat would be expected to be present during vegetation removal and these activities will not occur within critical habitat.

If all the above are true, you can conclude that your discharge-related activities will have no likely adverse effects, and:

- If there are any aquatic or aquatic-dependent species and/or critical habitat in your action area, you must skip to Section V, *Evaluation of Discharge Effects,* below.
- If there are no aquatic or aquatic-dependent species, you may skip to Section VI and verify that your activities will have no likely adverse effects. You must submit this form to EPA as specified in Section VII of this form. You may select criterion C on your NOI and may submit your NOI for permit coverage 30 days after you have submitted this completed form. You must also provide a description of the basis for the criterion you selected on your NOI form, **including the species and critical habitat list(s)**, and any other documentation supporting your eligibility. You must also include this completed *Criterion C Eligibility Form* in your SWPPP.
- **If any of the above are not true**, you cannot conclude that your discharge-related activities will have no likely adverse effects. You must complete the rest of this form (if applicable) and must submit the form to EPA for assistance in determining your eligibility for coverage.

SECTION V. EVALUATION OF DISCHARGE EFFECTS

Note: You are only required to fill out this section if your facility's action area includes aquatic and/or aquatic-dependent species and/or their critical habitat.

In this section, you will evaluate the likelihood of adverse effects from your facility's discharges. The scope of effects to consider will vary with each facility and species/critical habitat characteristics. The following are examples of discharge affects you should consider:

- *Hydrological Effects.* Stormwater discharges may adversely affect receiving waters by causing changes in water quality parameters such as turbidity, temperature, salinity, or pH. Stormwater discharges may adversely affect the immediate vicinity of the discharge point through streambank erosion and scour. These effects will vary with the amount of stormwater

discharged and the volume and condition of the receiving water. Where a stormwater discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely.

- *Toxicity of Pollutants.* Pollutants in stormwater may have toxic effects on listed species and may adversely affect critical habitat. Exceedances of benchmarks, effluent limitation guidelines, or state or tribal water quality requirements may be indicative of potential adverse effects on listed species or critical habitat. However, some listed species may be adversely affected at pollutant concentrations below benchmarks, effluent limitation guidelines, and state or tribal water quality standards due to exposures to multiple stressors at the same time. In addition, stormwater pollutants identified in Part 6.2.3.2 of your SWPPP, but not monitored as benchmarks or effluent limitation guidelines, may also adversely affect listed species and critical habitat.

As these effects are difficult to analyze for listed species, their prey, habitat, and designated critical habitat, this form helps you to analyze your discharges to make a determination of whether your discharges will likely have adverse effects and whether there are any additional controls you can implement to ensure no likely adverse effects.

A. Evaluation of Pollutants and Controls to Avoid Adverse Effects. In this section, you must document **all** of your pollutant sources and pollutants expected to be discharged in stormwater (see Part 8). You must also document the controls you will implement to avoid adverse effects on listed aquatic and aquatic-dependent species and critical habitat. You must include specific details about the expected effectiveness of the controls in avoiding adverse effects to the listed aquatic-and aquatic-dependent species and critical habitat. Attach additional pages if needed.

Potential Pollutant Source	Potential Pollutants	**Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat.** Include information supporting why the control(s) will ensure no adverse effects, including any data you have about the effectiveness of the control(s) in reducing pollutant concentrations. You may also attach photos of
e.g., **vehicle and equipment fueling**	***e.g.,*** • **Oil & grease** • **Diesel** • **Gasoline** • **TSS** • **Antifreeze**	***e.g.,*** • **Fueling operators (including the transfer of fuel from tank trucks) will be conducted on an impervious or contained pad or under cover** • **Drip pans will be used where leaks or spills of fuel can occur and where making and breaking hose connections** • **Spill kit will be kept on-site in close proximity to potential spill areas** • **Any spills will be cleaned-up immediately using dry clean-up methods** • **Stormwater runoff will be diverted around fueling areas using diversion dikes and curbing**

Potential Pollutant Source	Potential Pollutants	Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat.

Potential Pollutant Source	Potential Pollutants	Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat.

☐ Check if you are not able to make a preliminary determination that any of your pollutants will be controlled to a level necessary to avoid adverse effects on aquatic and/or aquatic-dependent listed species and their designated critical habitat. You must check in Section VI that you are unable to make a determination of no likely adverse effects and must complete the rest of the form. You must submit your completed form to EPA for assistance in determining your eligibility for coverage.

B. Analysis of Effects Based on Past Monitoring Data. Select which of the following applies to your facility:

☐ I have no previous monitoring data for my facility because there are no applicable monitoring requirements for my facility's sector(s).

☐ I have no previous monitoring data for my facility because I am a new discharger or a new source, but I am subject to monitoring under the 2021 MSGP. You must provide information to support a conclusion that your facility's discharges are not expected to result in benchmark or numeric effluent limit exceedances that will adversely affect listed species or their critical habitat:

☐ My facility has not had any exceedances under the 2015 MSGP of any required benchmark(s) or numeric effluent limits. I comply with the applicable monitoring requirements and have not had any exceedances

☐ My facility has had exceedances of one or more benchmark(s) or numeric effluent limits under the 2015 MSGP, but I have addressed them during my coverage under the 2015 MSGP, or in my evaluation of controls to avoid adverse effects in (A) above. Describe all actions (including specific controls) that you will implement to ensure that the pollutants in your discharge(s) will not result in likely adverse effects from future exceedances.

☐ Check if your facility has had exceedances of one or more benchmarks or numeric effluent limits under the 2015 MSGP and you have not been able to address them to avoid adverse effects from future exceedances, or if you are a new discharger or a new source but you are not sure if you can avoid adverse effects from possible exceedances. You must check in Section VI that you are unable to make a determination of no likely adverse effects. You must submit your completed form to EPA for assistance in determining your eligibility for coverage. You may not file your NOI for permit coverage until you are able to make a determination that your discharges will avoid adverse effects on listed species and designated critical habitat.

SECTION VI VERIFICATION OF PRELIMINARY EFFECTS DETERMINATION

Based on Steps I – V of this form, you must verify your preliminary determination of effects on listed species and designated critical habitat from your discharges and/or discharge-related activities:

- ☐ Following the applicable Steps in I – V above, I have provided information supporting a preliminary determination that my discharges and/or discharge-related activities are not likely to adversely affect listed species and designated critical habitats.
- ☐ Following the applicable Steps in I – V above, I am **not** able to provide information supporting a preliminary determination that my discharges and/or discharge-related activities are not likely to adversely affect listed species and designated critical habitats.

Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle initial, Last Name

Title

Signature:_____ Date:

E-mail:

SECTION VII CRITERION C ELIGIBILITY FORM SUBMISSION INSTRUCTIONS

Only if the applicable EPA Regional Office has granted you a waiver from electronic reporting, you must submit this completed form to EPA at msgpesa@epa.gov, including any attachments and any additional information that demonstrates how you will avoid or eliminate adverse effects to listed threatened and endangered species or designated critical habitat (e.g., specific controls you will implement to avoid or eliminate adverse effects). **Any missing or incomplete information may result in a delay of your coverage under the permit**.

If you have made a preliminary determination that your discharges and/or discharge-related activities are not likely to adversely affect listed species and critical habitat, this form must be submitted a minimum of 30 days prior to submitting your NOI for permit coverage under criterion C. Please note that during either the 30-day *Criterion C Eligibility Form* review period prior to your NOI submission, or within 30 days after your NOI submission and before you have been

authorized for permit coverage, EPA may advise you that additional information is needed, or that there are additional measures you must implement to avoid likely adverse effects.

If you are unable to make a preliminary determination that your discharges and/or discharge-related activities are not likely to adversely affect listed species and critical habitat, this worksheet must be submitted to EPA, but you may not file your NOI for permit coverage until you have received a determination from EPA that your discharges and/or discharge-related activities are not likely to adversely affect listed species and critical habitat.

Attachment 1

Include a **map and a written description** of the action area of your facility, as required in Step 2 of Section E.4 of Appendix E. You may choose to include the map that is generated from the FWS' on-line mapping tool IPaC (the *Information, Planning, and Consultation System*) located at http://ecos.fws.gov/ipac/.

The written description of your action area that accompanies your action area map must explain your rationale for the extent of the action area drawn on your map. For example, your action area written description may look something like this:

> *The action area for the (name of your facility)'s stormwater discharges extends downstream from the outfall(s) in (name of receiving waterbody) (# of meters/feet/kilometers/miles). The downstream limit of the action area reflects the approximate distance at which the discharge waters and any pollutants would be expected to cause potential adverse effects to listed species and/or critical habitat because (insert rationale). The action area does/does not extend to the (name of receiving waterbody)'s confluence with (name of confluence waterbody) because (insert rationale).*

Note that your action area written description will be highly site-specific, depending on the expected effects of your facility's discharges and discharge-related activities, receiving waterbody characteristics, etc.

Attachment 2

List or attach the list(s) of species and critical habitat in your action area on this sheet, as required in Step 3 of Section E.4 of Appendix E. You must include a list for applicable listed NMFS and USFWS species and critical habitat. If there are listed species and/or critical habitat for only one Service, you must include a statement confirming there are no listed species and/or critical habitat for the other Service. For USFWS species, include the USFWS Official Species List full printout from your IPaC query (including the consultation code and event code at the top of the FWS printout). *Note: If your Official Species List from the USFWS indicated no species or critical habitat were present in your action area, include the consultation code and event code that can be found at the top of your Official Species List in your NOI basis statement. If an Official Species List was not available on IPaC, list the contact date, the ecological services field office and the name of the Service staff with whom you corresponded to identify the existence of any USFWS species or critical habitat present in your action area.*

Appendix G - Notice of Intent (NOI) Form

Part 7.2 requires you to use the NPDES eReporting Tool, or "NeT", to prepare and submit your Notice of Intent (NOI). However, if the applicable EPA Regional office grants you a waiver to use a paper NOI form, and you elect to use it, you must complete and submit the following form.

Submission of this NOI constitutes notice that the operator identified in Section C of this form requests authorization to discharge pursuant to the NPDES Multi-Sector General Permit (MSGP) permit number identified in Section B of this form. Submission of this NOI also constitutes notice that the operator identified in Section C of this form meets the eligibility conditions of Part 1.1 of the MSGP for the facility identified in Section D of this form. To obtain authorization, you must submit a complete and accurate NOI form. Discharges are not authorized if your NOI is incomplete or inaccurate or if you were never eligible for permit coverage. Refer to the instructions at the end of this form to complete your NOI.

NPDES FORM 3510-6	EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 NOTICE OF INTENT (NOI) FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY UNDER THE NPDES MULTI-SECTOR GENERAL PERMIT	OMB No. 2040-0300 Exp. Date: 3/31/2024

Submission of this Notice of Intent (NOI) constitutes notice that the operator identified in Section C of this form requests authorization to discharge pursuant to the NPDES Stormwater Multi-Sector General Permit (MSGP) permit number identified in Section B of this form. Submission of this NOI also constitutes notice that the operator identified in Section C of this form meets the eligibility conditions of Part 1.1 of the MSGP for the facility identified in Section D of this form. To obtain authorization, you must submit a complete and accurate NOI form. Discharges are not authorized if your NOI is incomplete or inaccurate or if you were never eligible for permit coverage. Refer to the instructions at the end of this form to complete your NOI.

A. Approval to Use Paper NOI Form

1. Have you been granted a waiver from electronic reporting from the EPA Regional Office*? ☐ YES ☐ NO

If yes, check which waiver you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted: ☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.

☐ The owner/operator has issues regarding available computer access or computer capability

Name of EPA staff person that granted the waiver:

Date approval obtained: / /

*** Note: You are required to obtain approval from the applicable EPA Regional Office prior to using this paper NOI form. If you have not obtained a waiver, you must file this form electronically using the NPDES eReporting Tool (NeT) at http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-eNOI-System-for-EPAs-MultiSector-General-Permit.cfm**

B. Permit Information

NPDES ID (EPA Use Only):

1. Master Permit Number: (see Appendix C of the MSGP for the list of eligible master permit numbers)
2. Are you a new discharger or a new source as defined in Appendix A? ☐ YES ☐ NO (If yes, skip to Part C of this form).
3. If you are not a new discharger or a new source, have stormwater discharges from your facility been covered previously under an NPDES permit?
   ☐ YES ☐ NO

If yes, provide the NPDES ID if you had coverage under EPA's 2015 MSGP or the NPDES ID if you had coverage under an EPA individual permit:

4. Do you have a pending enforcement action related to industrial stormwater by EPA, a state, or a citizen (to include both notices of violation (NOVs) by EPA or a state and notices of intent to bring a citizen suit)? ☐ YES ☐ NO

C. Facility Operator Information

1. Operator Information:

Operator Name:

2. Mailing Address:

Street:

City: State: ZIP Code: -

County or Similar Government Subdivision:

Phone: - - Ext.

E-mail:

2. Operator Point of Contact Information:

First Name, Middle Initial, Last Name

Title:

3. NOI Preparer Information (Complete if NOI was prepared by someone other than the certifier):

First Name, Middle Initial, Last Name

Organization:

Phone: - - Ext.

E-mail:

D. Facility Information

1. Facility Name:

2. Facility Address:

Street/Location:

City: State: ZIP Code: -

County or Similar Government Subdivision:

3. Latitude/Longitude for the facility:

Latitude: __ __ . __ __ __ __ ° N (decimal degrees) Longitude: __ __ __ . __ __ __ __ ° W (decimal degrees)

Latitude/Longitude Data Source: ☐ Maps ☐ GPS ☐ Other _____

If you used a USGS topographic map, what was the scale? _____

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

4. Is your facility located on Indian Country lands? ☐ YES ☐ NO

If yes, provide the name of the Indian tribe associated with the area of Indian country (including name of Indian reservation, if applicable):

_____

5. Are you requesting coverage under this NOI as a "federal operator" as defined in Appendix A? ☐ YES ☐ NO

6. What is the ownership type of the facility?

☐ Federal Facility (U.S.Government) ☐ Privately Owned Facility ☐ Municipality ☐ County Government

☐ Corporation ☐ State Government ☐ Tribal Government ☐ School District

☐ District ☐ Mixed Ownership (e.g., Public/Private) ☐ Municipal or Water District

7. Estimated area of industrial activity at your facility exposed to stormwater:_____(to the nearest quarter acre)

8. Sector-Specific Information

Identify the 4-digit Standard Industrial Classification (SIC) code or 2-letter Activity Code that best represents the products produced or services rendered for which your facility is primarily engaged, as defined in the MSGP, and the applicable sector and subsector of your primary industrial activity (See Appendix D):

Primary SIC Code **OR Primary Activity Code:**

Sector: **Subsector:**

Identify the applicable sector(s) and subsector(s), SIC codes, and activity codes of any co-located industrial activity for which you are requesting permit

Sector: **Subsector:** **Sector:** **Subsector:** **Sector:** **Subsector:**

Sector: **Subsector:** **Sector:** **Subsector:** **Sector:** **Subsector:**

If you are a Sector S (Air Transportation) facility, do you anticipate using more than 100,000 gallons of pure glycol in glycol-based deicing fluids and/or 100 tons or more of urea on an average annual basis? ☐ YES ☐ NO

If you are a Sector G (Metal Mining) facility, do you have discharges from waste rock and overburden piles? ☐ YES ☐ NO

Check the type of ore you mine at your facility:

☐ Tungsten Ore ☐ Nickel Ore ☐ Aluminum Ore ☐ Mercury Ore

☐ Iron Ore ☐ Platinum Ore ☐ Titanium Ore ☐ Vanadium Ore

☐ Molybdenum ☐ Uranium, Radium, and/or Vanadium Ore ☐ Ore not listed

9. Is your facility presently inactive and unstaffed and are there no industrial materials or activities exposed to stormwater?* ☐ YES ☐ NO

*The requirement for benchmark monitoring does not apply at a facility that is inactive and unstaffed, provided that there are no industrial materials or activities exposed to stormwater. Note that if your facility becomes inactive and unstaffed and/or industrial materials or activities become exposed to stormwater during the permit term, you must submit an NOI modification to reflect the change.

E. Discharge Information

1. By indicating "Yes" below, I confirm that I understand that the MSGP only authorizes the authorized stormwater discharges in Part 1.2.1 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), during an inspection, etc. If any discharges requiring NPDES permit coverage other than the authorized stormwater and non-stormwater discharges listed in Parts 1.2.1 and 1.2.2 will be discharged, they must be covered under another NPDES permit. ☐ YES

2. Federal Effluent Limitation Guidelines

Are you requesting permit coverage for any stormwater discharges subject to effluent limitation guidelines? ☐ YES ☐ NO

If yes, which effluent limitation guidelines apply to your stormwater discharges?

40 CFR Part/Subpart	Eligible Discharges	Affected MSGP Sector	New Source Date	Check if Applicable
Part 411, Subpart C	Runoff from material storage piles at cement manufacturing facilities	E	2/20/1974	☐
Part 418 Subpart A	Runoff from phosphate fertilizer manufacturing facilities that comes into contact with any raw materials, finished product, by-products or waste products (SIC 2874)	C	4/8/1974	☐
Part 423	Coal pile runoff at steam electric generating facilities	O	11/19/1982 10/8/1974[1]	☐
Part 429, Subpart I	Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas	A	1/26/1981	☐
Part 436, Subpart B, C, or D	Mine dewatering discharges at crushed stone mines, construction sand and gravel mines, or industrial sand mines	J	N/A	☐
Part 443, Subpart A	Runoff from asphalt emulsion facilities	D	7/28/1975	☐
Part 445, Subparts A & B	Runoff from hazardous waste and non-hazardous waste landfills	K, L	2/2/2000	☐
Part 449	Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	S	6/15/2012	☐

[1]NSPS promulgated in 1974 were not removed via the 1982 regulation; therefore, wastewaters generated by Part 423-applicable sources that were New Sources under the 1974 regulations are subject to the 1974 NSPS.

3. Receiving Waters Information: (Attach a separate list if necessary)

List all of the stormwater discharge points from your facility. Each discharge point must be identified by a unique 3-digit ID (e.g., 001, 002). Also provide the latitude and longitude in degrees decimal for each discharge point.		**For each outfall, provide the following receiving water information:**					
		Provide the name of the first water of the U.S. that receives stormwater directly from the discharge point and/or from the MS4 that the outfall discharges to:	**If the receiving water is impaired (on the CWA 303(d) list), list the pollutants that are causing the impairment:**	**If a TMDL has been completed for this receiving waterbody, providing the following information:**	**Is this receiving water saltwater or freshwater?**	**Is this receiving water designated by the state or tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water) or as a Tier 3 water (Outstanding National Resource Water)?**	***For freshwater discharges from operators in subsectors K1 and G2 only:* is this receiving water still/standing (lentic) (e.g., lake or impoundment) or flowing (lotic) (e.g., river or stream)?**
Discharge Point ID				TMDL ID:____ Pollutants for which there is a TMDL: _____ _____	☐ Freshwater ☐ Saltwater	☐ Tier 2/2.5 ☐ Tier 3 (Outstanding National Resource Waters)*	☐ Still/standing ☐ Flowing
Latitude							
Longitude							
Discharge Point ID				TMDL ID:____ Pollutants for which there is a TMDL: _____ _____	☐ Freshwater ☐ Saltwater	☐ Tier 2/2.5 ☐ Tier 3 (Outstanding National Resource Waters)*	☐ Still/standing ☐ Flowing
Latitude							
Longitude							
If substantially identical to other discharge point, list identical discharge point ID: _____							
Discharge Point ID				TMDL ID:____ Pollutants for which there is a TMDL: _____ _____	☐ Freshwater ☐ Saltwater	☐ Tier 2/2.5 ☐ Tier 3 (Outstanding National Resource Waters)*	☐ Still/standing ☐ Flowing
Latitude							
Longitude							
If substantially identical to other discharge point, list identical discharge point ID: _____							

*Note: You are ineligible for coverage if you are a new discharger or new source to waters designated as Tier 3 (Outstanding National Resource Waters) for antidegradation purposes under 40 CFR 131.13(a)(3).

4. Provide the following Information about your discharge point latitude/longitude:
Latitude/Longitude Data Source:

If you used a USGS topographic map, what was the scale? _____

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

5. Does your facility discharge into a Municipal Separate Storm Sewer System (MS4)? ☐ YES ☐ NO
If yes, provide the name of the MS4 operator: _____

6. If you are subject to benchmark monitoring requirements for a hardness-dependent metal, what is the hardness of your receiving water(s) (see Appendix J)? _____(mg/L)

7. For facilities in EPA Region 10: Does your facility discharge to a federal CERCLA site listed in Appendix P? ☐ YES ☐ NO

7.a. If yes, did you notify the EPA Regional Office in advance of filing your NOI, and did the EPA Regional Office determine that you are eligible for permit coverage pursuant to Part 1.1.7*? ☐ YES ☐ NO

*** Note: If you discharge to a federal CERCLA site listed in Appendix P, you are ineligible for coverage under this permit unless you notify the EPA Regional Office in advance and the EPA Regional Office determines you are eligible coverage under this permit. In determining your eligibility for coverage under this Part, the EPA Regional Office may evaluate whether you have included adequate controls and/or procedures to ensure that your discharges will not lead to recontamination of aquatic media at the CERCLA Site such that it will cause or contribute to an exceedance of a water quality standard.**

8. *For operators in New Mexico only:* Do you anticipate the discharge of groundwater or spring water from your facility? ☐ YES ☐ NO

*If yes, below you are asked to provide information on flow and potential to encounter impacted ground or spring water such that there is a potential for contamination. If potential for contamination exists, you will be asked to provide test result data to EPA Region 6 and the NMED Surface Water Quality Bureau. If the test data exceed State Water Quality Standards, the ground or spring water cannot be discharged from the facility into surface waters under this permit. Discharge to surface waters must be conducted under a separate NPDES individual permit to ensure proper treatment and disposal. If disposal will be to the ground surface or in an unlined pond, you must submit a Notice of Intent to Discharge (NOI) to the NMED Ground Water Quality Bureau. For further assistance determining whether your facility may encounter impacted groundwater, the permittee may contact the NMED Ground Water Quality Bureau at (505) 827-2965.

8.a. If yes, what is the anticipated flow rate of the groundwater or spring water? _____

8.b. Provide information on the potential to encounter impacted ground or spring water in the space provided below:

8.c. Using the Mapper tool located at https://gis.web.env.nm.gov/oem/ for reference, check if the following groundwater pollutant sources are located nearby the anticipated source of groundwater or spring water such that there is potential for contamination:

Project Location Relative to a Source of Potential Groundwater Contamination	**Constituents likely to be required for testing**	**Check if applicable**
Within 0.5 mile of an open Leaking Tank site	BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) plus additional parameters depending on site conditions.	☐
Within 0.5 mile of an open Voluntary Remediation site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)	☐
Within 0.5 mile of an open RCRA Corrective Action site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)	☐
Within 0.5 mile of an open Abatement site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)	☐
Within 0.5 mile of an open Brownfield site	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)	☐
Within 1.0 mile of a Superfund site with associated groundwater contamination	All parameters listed in 20.6.4.900 NMAC, hardness and pH (or an alternate list approved by the NMED SWQB)	☐
EPA approved-sufficiently sensitive methods must be used – approved methods are listed in 40 C.F.R. 136.3.		

8.d. If any of the above are applicable, provide a summary of test data indicating the quality of the groundwater or spring water to be discharged:

F. Stormwater Pollution Prevention Plan (SWPPP) Information

1. Has the SWPPP been prepared in advance of filing this NOI, as required?

2. SWPPP Contact Information:

First Name, Middle Initial, Last Name:

Professional Title:

Phone: - - Ext.

E-mail:

3. SWPPP Availability:

Your current SWPPP or certain information from your SWPPP must be made available through one of the following two options. Select one of the options and provide the required information*:

*** Note: You are not required to post any confidential business information (CBI) or restricted information (as defined in Appendix A) (such information may be redacted), but you must clearly identify those portions of the SWPPP that are being withheld from public access.**

☐ **Option 1**: Maintain a current copy of your SWPPP on an Internet page (Universal Resource Locator or URL).

Provide the web address URL:_____

☐ **Option 2**: Provide the following information from your SWPPP:

A. Describe your onsite industrial activities exposed to stormwater (e.g., material storage; equipment fueling, maintenance, and cleaning; cutting steel beams), and potential spill and leak areas:

B. List the pollutant(s) or pollutant constituent(s) associated with each industrial activity exposed to stormwater that could be discharged in stormwater and any authorized non-stormwater discharges listed in Part 1.2.2:

C. Describe the control measures you will employ to comply with the non-numeric technology-based effluent limits required in Part 2.1.2 and Part 8, and any other measures taken to comply with the requirements in Part 2.2 Water Quality-Based Effluent Limitations (see Part 6.2.4):

D. Provide a schedule for good housekeeping and maintenance (see Part 6.2.5.1) and a schedule for all inspections required in Part 3 (see Part 6.2.5.2):

G. Endangered Species Protection

Using the instructions in Appendix E of the MSGP and the Criterion Selection Worksheet in Appendix E, Part E.4, under which criterion listed below are you eligible for coverage under this permit?* You must consider Endangered Species Act listed (ESA-listed) threatened or endangered species and/or designated critical habitat(s) under the jurisdiction of both the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) and check only the 1 box that is the most conservative criterion that applies to your facility stormwater discharge.

*Note: You must use the information from the USFWS IPaC and NMFS Species Directory (see MSGP Appendix E, Part E.4, Step 2 and 3) when determining the presence of ESA-listed species and critical habitat. Attaching aerial image(s) of the site to this NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.

After you submit your NOI and before your NOI is authorized, EPA may notify you if any additional controls are necessary to ensure your discharges have no likely adverse effects on ESA-listed species and critical habitat.

☐ A. **No ESA-listed species and/or critical habitat present in action area.** No ESA-listed species and designated critical habitat(s) are likely to occur in your facility's "action area" as defined in Appendix A. You must provide a description below of the basis for selecting this criterion and provide documentation supporting your eligibility determination in your SWPPP. **[Basis statement content: A basis statement supporting the selection of this criterion should identify the USFWS and NMFS information sources used. State resources are not acceptable. Attaching aerial image(s) of the site to this NOI is helpful to EPA, USFWS, and NMFS in confirming eligibility under this criterion. Note that NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.]**

☐ B. **Eligibility requirements met by another operator under the 2021 MSGP.** Your industrial activity's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility criteria A, C, D, or E of the 2021 MSGP and you have confirmed that no additional ESA-listed species and designated critical habitat not considered in that certification may be present or located in the "action area" (e.g., due to a new species listing or critical habitat designation). To certify your eligibility under this criterion, there must be no lapse of NPDES permit coverage in the other 2021 MSGP operator's certification. By certifying eligibility under this criterion, you must comply with any conditions upon which the other operator's certification was based. You must include in your NOI the NPDES ID assigned to the other 2021 MSGP operator's authorization under this permit. If your certification is based on another 2021 MSGP operator's certification under criterion C, you must provide EPA with the relevant supporting information required (i.e., permit tracking number, industrial activity SWPPP, a description of the basis for the criterion selected) in your NOI form. **[Basis statement content: A basis statement supporting the selection of this criterion must identify the eligibility criterion of the other MSGP NOI, the authorization date, and confirmation that the authorization is effective.]**

If you select criterion B, provide the NPDES ID from the other operator's notification of authorization under this permit: _____

☐ C(1). **Facility eligible for Criterion C in the 2015 MSGP with NO CHANGE to listed species, critical habitat, or action area.** Your facility was eligible for Criterion C in the 2015 MSGP and there has been no change in your facility's action area and you have confirmed that there are no additional threatened or endangered species or designated critical habitat under the jurisdiction of the USFWS and/or NMFS in your action area since your certification under Criterion C in the 2015 MSGP. You must provide a description of the basis of this criterion selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP. [**Basis statement content: A basis statement supporting the selection of this criterion must provide the USFWS and/or NMFS resources consulted that helped you determine that there are no additional species and/or critical habitat under the jurisdiction of the Services in your action area.]**

☐ C(2). **Facility eligible for Criterion C in the 2015 MSGP with CHANGES to listed species, critical habitat, or action area.** Your facility was eligible for Criterion C in the 2015 MSGP, but there have been changes in your facility's action area, and/or there are additional threatened or endangered species and/or designated critical habitat under the jurisdiction of the USFWS and/or NMFS in your action area since your certification under Criterion C under the 2015 MSGP. You must provide a description of the basis of this criterion selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP. **[Basis statement content: A basis statement supporting the selection of this criterion must identify the following:**

1. A description of the changes in the facility's action area (if applicable).
2. The USFWS and/or NMFS resources consulted that helped you determine that additional species and/or critical habitat have been listed/designated by either of the Services in your action area.
3. What ESA-listed species and/or designated critical habitat are located in your "action area".
4. Distance in miles between your site and the ESA-listed species and/or designated critical habitat within the action area (in miles, state "on site" if the ESA-listed species and/or designated critical habitat is within the area to be disturbed.
5. A description of EPA approved measures you will implement or will continue to implement to ensure no likely adverse effects on ESA-listed species and/or critical habitat.]

☐ C(3). **ESA-listed species and/or designated critical habitat likely to occur, but discharges not likely to adversely affect them.** ESA-listed threatened or endangered species or their designated critical habitat(s) under the jurisdiction of USFWS and/or NMFS are likely to occur in or near your facility's "action area," and you certify to EPA that your industrial activity's discharges and discharge-related activities are not likely to adversely affect ESA-listed and/or critical habitat. To certify your eligibility under this criterion, you must complete the Criterion C Eligibility Form, which you must submit to EPA at least 30 days prior to filing your NOI for permit coverage. After evaluation of your Criterion C Eligibility Form, EPA may require additional measures that you must implement to avoid or eliminate likely adverse effects on ESA-listed species and/or critical habitat from discharges and discharge-related activities. You may submit your NOI for permit coverage 30 days after submitting to EPA your completed Criterion C Eligibility Form. You must also provide a description of the basis for the criterion you selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP.
[Basis statement content: A basis statement supporting the selection of this criterion must identify the following:

1. The USFWS and NMFS information resources and expertise (e.g., state or federal biologists) used to arrive at this conclusion. Any supporting documentation should explicitly state that both ESA-listed species and designated critical habitat under the jurisdiction of the USFWS and/or NMFS were considered in the evaluation.
2. What ESA-listed species and/or designated critical habitat are located in your "action area".
3. Distance in miles between your site and the ESA-listed species and/or designated critical habitat within the action area (in miles, state "on site" if the ESA-listed species and/or designated critical habitat is within the area to be disturbed).
4. A description of EPA approved measures you will implement to ensure no likely adverse effects on ESA-listed species and/or critical habitat
5. A statement affirming that "I submitted my completed Criterion C Eligibility Form to EPA at least 30 days prior to submitting this NOI and agree to implement any additional measures that were determined by EPA to be necessary to ensure that my discharges and/or discharge-related activities will not have likely adverse effects on listed species and critical habitat."
6. Date you sent completed Criterion C Eligibility form to EPA.]

☐ D. **ESA Section 7 consultation has successfully concluded.** Consultation between a Federal Agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the Endangered Species Act has concluded. The consultation must have addressed the effects of the facility's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS. To certify eligibility under this criterion, indicate the result of the consultation:

1. A biological opinion and/or conference opinion that concludes that the action in question (taking into account the effects of your facility's discharges and discharge-related activities) is not likely to jeopardize the continued existence of ESA-listed species, or result in the destruction or adverse modification of designated critical habitat; or

2. Written concurrence from the applicable Service(s) with a finding that your facility's discharges and discharge-related activities are not likely to adversely affect ESA-listed species or designated critical habitat.

You must verify that the consultation does not warrant reinitiation under 50 CFR §402.16. If reinitiation of consultation is required, in order to be eligible under this criterion you must ensure consultation is reinitiated and the result of the consultation must be consistent with Criterion D (i), or (ii) above.

If eligible under Criterion D, you must also provide supporting documentation for your determination in your NOI and SWPPP, including the Biological Opinion (or ECO tracking number) or concurrence letter. You must include copies of the correspondence between yourself and the USFWS and/or NMFS in your SWPPP and your NOI. **[Basis statement content: A basis statement supporting the selection of this criterion should identify the federal action agency(ies) involved, the field office/regional office(s) providing that consultation, any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, ECO number), and the date the consultation was completed.]**

☐ E. **Issuance of section 10 permit.** Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the facility's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI. **[Basis statement content: A basis statement supporting the selection of this criterion should identify whether USFWS or NMFS or both agencies provided a section 10 permit, the field office/regional office(s) providing permit(s), any tracking numbers of identifiers associated with that consultation (e.g., IPaC number, ECO number), and the date the permit was granted.]**

H. Historic Preservation

1. If your facility is not located on Indian country lands, is your facility located on a property of religious or cultural significance to an Indian tribe?

☐ YES ☐ NO

If yes, provide the name of the Indian tribe associated with the property:_____

2. Using the instructions in Appendix F of the MSGP, under which historic properties preservation criterion listed in Part 1.1.4.6 are you eligible for coverage under this permit (only check 1 box)?

☐ A ☐ B ☐ C ☐ D

I. Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle, Last Name: _____ _____ _____

Title: _____

Signature:_____ Date: ___ / ___ / ____

E-mail: _____

Instructions for Completing EPA Form 3510-6

Notice of Intent (NOI) for Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 3510-6 (06/15) Form Approved OMB No. 2040-0300

Who Must File an NOI Form

Under section 402(p) of the Clean Water Act (CWA) and regulations at 40 CFR Part 122, stormwater discharges associated with industrial activity are prohibited to waters of the United States unless authorized under a National Pollutant Discharge Elimination System (NPDES) permit. You can obtain coverage under the MSGP by submitting a completed Notice of Intent (NOI) if you are an operator of a facility:

- that is located in a jurisdiction where EPA is the permitting authority, listed in Appendix C of the MSGP,
- that discharges stormwater associated with industrial activities, identified in Appendix D of the MSGP,
- that meets the eligibility requirements in Part 1.1 of the permit,
- that has developed a stormwater pollution prevention plan (SWPPP) in accordance with Part 6 of the MSGP; and
- that installs and implements control measures in accordance with Part 2 and Part 8 to meet numeric and non-numeric effluent limits.

Completing the Form

Obtain and read a copy of the 2021 MSGP, viewable at http://water.epa.gov/polwaste/npdes/stormwater/EPA-Multi-Sector-General-Permit-MSGP.cfm. To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. **Please submit original document with signature in ink - do not send a photocopied signature.**

Section A. Approval to Use Paper NOI Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper NOI form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA staff person who granted the waiver, and the date that approval was provided.

See http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-Contacts.cfm for a list of EPA Regional Office contacts.

Section B. Permit Information

Provide the master permit number of the permit under which you are applying for coverage (see Appendix C of the general permit for the list of eligible master permit numbers).

You must indicate whether you are a new discharger or a new source (see Appendix A for the definitions). If you are not a new discharger or a new source, you must indicate whether stormwater discharges from your facility have been previously covered under another NPDES permit. If yes, you must provide the unique NPDES ID (i.e., permit tracking number) for the previous permit your facility was covered under.

You must also indicate whether you have a pending enforcement action by EPA, a state, or a citizen, related to industrial stormwater.

Section C. Facility Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the facility described in this NOI. An operator of a facility is the legal entity that controls the operation of the facility. Refer to Appendix A of the permit for the definition of "operator". Provide the operator's mailing address, phone number, and e-mail. Correspondence for the NOI will be sent to this address. Also provide the name and title for the operator point of contact (note that the point of contact name may be the same as the operator name).

If the NOI was prepared by someone other than the certifier (for example, if the NOI was prepared by the facility SWPPP contact or a consultant for the certifier's signature), include the full name, organization, phone number, and e-mail address of the NOI preparer.

Section D. Facility Information

Enter the official or legal name and complete address, including city, state, ZIP code, and county or similar government subdivision of the facility. If the facility lacks a street address, indicate the general location of the facility (e.g., Intersection of State Highways 61 and 34). Complete facility information must be provided for permit coverage to be granted.

Provide the latitude and longitude of your facility in decimal degrees format. The latitude and longitude of your facility can be determined in several different ways, including through the use of global positioning system (GPS) receivers, U.S. Geological Survey (USGS) topographic or quadrangle maps. Refer to http://transition.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html/ for assistance in providing the proper latitude/longitude format. For consistency, EPA requests that measurements be taken from the approximate center of the facility. Specify which method you used to determine latitude and longitude. If a USGS topographic map is used, specify the scale of the map used. Enter the horizontal reference datum for your latitude and longitude. The horizontal reference datum used on USGS topographic maps is shown on the bottom left corner of USGS topographic maps; it is also available for GPS receivers.

Indicate whether the facility is on Indian country lands, and if so, provide the name of the Indian tribe associated with the area of Indian country (including name of Indian reservation, if applicable).

Indicate whether you are seeking coverage under this permit as a "federal operator" as defined in Appendix A. Also check the ownership type for the facility (e.g., Federal Facility, Privately Owned Facility, Municipality, County Government, Corporation, State Government, Tribal Government, School District, District, Mixed Ownership [e.g., public/private], Municipal or Water District).

Enter the estimated area of industrial activity at your facility exposed to stormwater to the nearest quarter acre.

Indicate whether, during coverage under this permit, there will be stormwater discharges from paved surfaces that will be sealed or re-sealed with coal-tar where industrial activities are located.

List the four-digit Standard Industrial Classification (SIC) code or two character activity code that best describes the primary industrial activities performed by your facility under which you are required to obtain permit coverage. Your primary industrial activity includes any activities performed on-site which are (1) identified by the facility's primary SIC code and included in the descriptions of 40 CFR 122.26(b)(14)(ii), (iii), (vi), or (viii); or (2) included in the narrative descriptions of 40 CFR 122.26(b)(14)(i), (iv), (v), (vii), or (ix). See Appendix D of the MSGP for a complete list of SIC codes and activities codes covered under the MSGP. Also provide the applicable sector and subsector associated with the SIC code or activity code for your primary industrial activities. For a complete list of sector and subsector codes, see Appendix D of the MSGP.

If your facility has co-located industrial activities that are not identified as your primary industrial activity, identify the sector, subsector, SIC, and

Instructions for Completing EPA Form 3510-6

Notice of Intent (NOI) for Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 3510-6 (06/15) Form Approved OMB No. 2040-0300

For Sector A facilities (Timber Products), indicate whether you manufacture, use or store creosote or creosote treated wood in areas that are exposed to precipitation.

For Sector S facilities (Air Transportation), indicate whether you anticipate that the entire airport facility will use more than 100,000 gallons of pure glycol in glycol-based deicing fluids and/or 100 tons or more of urea on an average annual basis. If so, additional effluent limits and monitoring conditions apply to your discharge (see Part 8.S of the permit).

For Sector G facilities (Metal Mining), check the type of ore(s) mined at the facility.

Indicate whether your facility is currently inactive and unstaffed. Note that if your facility becomes inactive and unstaffed and/or industrial materials or activities become exposed to stormwater during the permit term, you must submit an NOI modification to reflect the change.

Section E. Discharge Information

You must confirm that you understand that the MSGP only authorizes the allowable stormwater discharges listed in Part 1.2.1 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized under the MSGP are not covered by the MSGP or the permit shield provision of the CWA Section 402(k) and they cannot become authorized or shielded by disclosure to EPA, state, or local authorities via the NOI to be covered by the permit or by any other means (e.g., in the SWPPP or during an inspection). If any discharges requiring NPDES permit coverage other than the allowable stormwater and non-stormwater discharges listed in Parts 1.2.1 and 1.2.2 will be discharged, they must either be eliminated or covered under another NPDES permit.

Depending on your industrial activities, your facility may be subject to federal effluent limitation guidelines which include additional effluent limits and monitoring requirements for your facility. Please review these requirements, described in Part 2.1.3 of the MSGP, and check any appropriate boxes on the NOI form.

You must identify all the discharge points from your facility that discharge stormwater. Each outfall must be assigned a unique 3-digit ID (e.g., 001, 002, 003). You must also provide the latitude and longitude for each discharge point from your facility. Indicate whether any discharge points are substantially identical to a discharge point already listed, and identify the discharge point it is identical to. For each unique discharge point you list, you must specify the name of the first water of the U.S. that receives stormwater directly from the discharge point and/or from the MS4 that the discharge point discharges to. You must specify whether any receiving waters that you discharge to are listed as "impaired" as defined in Appendix A, and the pollutants for which the water is impaired. You must also check identify any Total Maximum Daily Loads (TMDL) that have been completed for any of the waters of the U.S. that you discharge to. For each unique discharge point you must indicate whether the receiving water is saltwater or freshwater, and indicate whether discharges from the facility will enter into a water of the U.S that is designated as a Tier 2, Tier 2.5, or Tier 3 water. A list of Tier 2, 2.5, and 3 waters is provided as Appendix L. If the answer is "yes", name all waters designated as Tier 2, Tier 2.5, or Tier 3 to which the facility will discharge. Note that you are ineligible for coverage if you are a new discharger or a new source to waters designated as Tier 3 (outstanding national resource waters) for antidegradation purposes under 40 CFR 131.13(a)(3).

If your facility is in subsector K1 or G2, you must also indicate, for each unique discharge point, if the receiving water is still/standing (lentic) (e.g., a lake or impoundment) or flowing (lotic) (e.g., a river or stream).

You must also provide information about the discharge point latitude/longitude, including data source, the scale (if applicable), and the horizontal reference datum. See the instructions in Section D for more information about determining the latitude and longitude.

Identify whether your facility discharges into a Municipal Separate Storm Sewer System (MS4). If yes, provide the name of the MS4 operator. If you are uncertain of the MS4 operator, contact your local government for that information.

If you are subject to any benchmark monitoring requirements for metals (see the requirements applicable to your Sector(s) in Part 8 of the permit), indicate the hardness for your receiving water(s). See Appendix J of the permit for information about determining waterbody hardness.

If you are subject to benchmark monitoring requirements for hardness-dependent metals you must also answer whether your facility discharges into any saltwater receiving waters.

If our facility is located in EPA Region 10, indicate whether your facility will discharge to a federal CERCLA site listed in Appendix P. Note that if your facility will discharge into a federal CERCLA site listed in Appendix P, you are not eligible for coverage under this permit unless you notify the EPA Regional Office in advance and the EPA Regional Office authorizes overage under this permit after you have included adequate controls and/or procedures designed to ensure that discharges will not lead to recontamination of aquatic media at the CERCLA site such that your discharge will cause or contribute to an exceedance of a water quality standard.

Operators in New Mexico, indicate whether you anticipate the discharge of groundwater or spring water from your facility. If yes, you must provide information on flow and potential to encounter impacted ground or spring water such that there is a potential for contamination. You must also use the mapper tool located at https://gis.web.env.nm.gov/oem/ to determine if the groundwater sources listed are located near the anticipated source of groundwater or spring water such that there is potential for contamination. If potential for contamination exists, you must provide a summary of test data indicating the quality of the groundwater or spring water to be discharged.

Section F. Stormwater Pollution Prevention Plan (SWPPP) Information

All facilities eligible for coverage under this permit are required to prepare a SWPPP in advance of filing the NOI, in accordance with Part 6. Indicate whether the SWPPP has been prepared in advance of filing the NOI.

Indicate the contact information (name, phone, and e-mail) for the person who developed the SWPPP for this facility.

You identify how your SWPPP information will be made available, consistent with Part 5.4 and 7.3 of the permit. If you are making your SWPPP publicly available on a web site, check Option 1 and provide the appropriate Internet URL address. If you are not providing a URL, check Option 2 and provide the selected SWPPP information on this NOI form. You may copy and paste this information directly from your SWPPP.

Instructions for Completing EPA Form 3510-6

Notice of Intent (NOI) for Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 3510-6 (06/15) Form Approved OMB No. 2040-0300

Section G. Endangered Species Protection

Using the instructions in Appendix E, indicate the Part 1.1.4.5 criterion (i.e., A, B, C, D, or E) you are eligible under with regard to the protection of federally listed endangered and threatened species and designated critical habitat. A description of the basis for the criterion selected must also be provided.

If criterion B is selected, provide the NPDES ID (i.e., permit tracking number) for the other operator who has certified their eligibility under this permit. The NPDES ID was assigned when the operator received coverage under this permit.

If criterion C is selected, you must specify the federally-listed species or designated critical habitat that are located in the "action area" of the facility. You must also indicate under which scenario you determined you were eligible to submit your NOI under criterion C using Appendix E, and answer any corresponding questions.

If criterion D or E is selected, attach copies of any communications between you and the U.S. Fish and Wildlife Service and National Marine Fisheries Service to this NOI.

Section H. Historic Preservation

If the project is not located in Indian country lands, indicate whether the project is located on a property of religious or cultural significance to an Indian tribe, and if so, provide the name of the Indian tribe associated with the property. Use the instructions in Appendix F to complete the questions on the NOI form regarding historic preservation.

Section I. Certification

Certification statement and signature (see Section B.11 of Appendix B of the MSGP for more information). Enter certifier's printed name, title and email address. Sign and date the form. (CAUTION: An unsigned or undated NOI form will prevent the granting of permit coverage.) Federal statutes provide for severe penalties for submitting false information on this application form. Federal regulations require this application to be signed as follows:

For a corporation: by a responsible corporate officer, which means: (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA). Include the name and title of the person signing the form and the date of signing.

An unsigned or undated NOI form will not be considered eligible for permit coverage.

Modifying Your NOI

If you have been granted a waiver from your Regional Office from electronic reporting, and if after submitting your NOI you need to correct or update any fields on this NOI form, you may do so by indicating changes on this same form.

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0300). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 4.1 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Submitting Your Form

If you have been granted a waiver from your Regional Office to submit a paper NOI form, you must send your NOI by mail to one of the following addresses:

For Regular U.S. Mail Delivery:
Stormwater Notice Processing Center
Mail Code 4203M, ATTN: 2021 MSGP Reports
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For Overnight/Express Mail Delivery:
Stormwater Notice Processing Center
William Jefferson Clinton East Building - Room 7420
ATTN: 2021 MSGP Reports
U.S. EPA
1201 Constitution Avenue, NW
Washington, DC 20004

Visit this website for instructions on how to submit electronically:
http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-eNOI- System-for-EPAs-MultiSector-General-Permit.cfm

Appendix H - Notice of Termination (NOT) Form

Part 7.2 requires you to use the NPDES eReporting Tool, or "NeT", to prepare and submit your No Exposure Certification (NEC) form. However, if you are given a waiver by the EPA Regional Office to use a paper NEC form, and you elect to use it, you must complete and submit the following form.

NPDES FORM 3510-7	EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 NOTICE OF TERMINATION (NOT) FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY UNDER THE NPDES MULTI-SECTOR GENERAL PERMIT	OMB No. 2040-0300 Exp. Date: 3/31/2024

Submission of this Notice of Termination constitutes notice that the operator identified in Section C of this form is no longer authorized to discharge pursuant to the NPDES Multi-Sector General Permit (MSGP) from the facility identified in Section D of this form. All necessary information must be included on this form. Refer to the instructions at the end of this form.

1. Have you been granted a waiver from electronic reporting from the EPA Regional Office*? ☐ YES ☐ NO

If yes, check which waiver you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted:
- ☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.
- ☐ The owner/operator has issues regarding available computer access or computer capability

Name of EPA staff person that granted the waiver:

Date approval obtained: / /

*** Note: You are required to obtain approval from the applicable Regional Office prior to using this paper NOT form. If you have not obtained a waiver, you must file this form electronically using the NPDES eReporting Tool (NeT) at https://www.epa.gov/npdes/stormwater-discharges-industrial-activities**

1. NPDES ID:

2. Reason for Termination (check one only):

- ☐ A new owner or operator has taken over responsibility for the facility.
- ☐ You have ceased operations at the facility, there are not or no longer will be discharges of stormwater associated with industrial activity from the facility, and you have already implemented necessary sediment and erosion controls as required by Part 2.1.2.5.
- ☐ You are a Sector G, H, or J facility and you have met the applicable termination requirements.
- ☐ You obtained coverage under an individual or alternative general permit for all discharges required to be covered by an NPDES permit.

1. Operator Name:

2. Mailing Address:

Street:

City: State: ZIP Code: -

3. Phone: - - Ext.

4. E-mail:

1. Facility Name:

2, Facility Address:

Street:

City: State: ZIP Code: -

County or Similar Government Subdivision:

E. Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle, Last Name

Title:

Signature: _____ Date: / /

E-mail:

Instructions for Completing EPA Form 3510-7

Notice of Termination for Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 3510-7 (06/15) Form OMB No. 2040-0300

Who May File Notice of Termination (NOT) Form

Permittees currently covered by EPA's NPDES Stormwater Multi-Sector General Permit (MSGP or permit) must submit a Notice of Termination (NOT) within 30 days after one or more of the following conditions have been met:

- A new owner or operator has assumed responsibility for the facility;
- You have ceased operations at the facility and there are not or no longer will be discharges of stormwater associated with industrial activity from the facility and you have already implemented necessary sediment and erosion controls per Part 2.1.2.5;
- You are a Sector G, H, or J facility and you have met the applicable termination requirements; or
- You obtained coverage under an individual or alternative general permit for all discharges required to be covered by an NPDES permit.

See the MSGP Part 1.4.2 for more information.

Completing the Form

To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. Please submit original document with signature in ink - do not send a photocopied signature.

Section A. Approval to Use Paper NOT Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper NOT form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date that approval was provided. See https://www.epa.gov/npdes/contact-us-stormwater for a list of EPA Regional Office contacts.

Section B. Permit Information

Enter the existing NPDES ID (i.e., NOI tracking number) assigned to your permit authorization.

Indicate your reason for submitting this NOT by checking the appropriate box. Check only one box (see MSGP Part 1.4.2 for more information).

Section C. Facility Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the facility described in this NOT. An operator of a facility is the legal entity that controls the operation of the facility. Refer to Appendix A of the permit for the definition of "operator". Provide the operator's mailing address, phone number, and e-mail.

Section D. Facility Information

Enter the official or legal name and complete street address, including city, state, ZIP code, and county or similar government subdivision of the facility. If the facility lacks a street address, indicate the general location of the facility (e.g., Intersection of State Highways 61 and 34). Complete facility information must be provided for termination of permit coverage to be valid.

Section E. Certification Information

All NOTs must be signed as follows:

For a corporation: By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (i)a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA). Include the name and title of the person signing the form and the date of signing.

Include the name, title, and e-mail address of the person signing the form and the date of signing. An unsigned or undated NOT form will not be considered valid termination of permit coverage.

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0300). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 0.5 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Instructions for Completing EPA Form 3510-7

Notice of Termination for Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 3510-7 (06/15) Form OMB No. 2040-0300

Submitting Your Form

If you have been granted a waiver from your Regional Office to submit a paper NOT form, you must send your NOT by mail to one of the following addresses:

For Regular U.S. Mail Delivery:

Stormwater Notice Processing Center
Mail Code 4203M, ATTN: 2020 MSGP Reports
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For Overnight/Express Mail Delivery:

Stormwater Notice Processing Center
William Jefferson Clinton East Building - Room 7420
ATTN: 2020 MSGP Reports
U.S. EPA
1201 Constitution Avenue, NW Washington, DC 20004

Visit this website for instructions on how to submit electronically: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities

Appendix I - Annual Report Form

Part 7.2 requires you to use the NPDES eReporting Tool, or "NeT", to prepare and submit your Annual Report. However, if you are given a waiver by the EPA Regional Office to use a paper annual report form, and you elect to use it, you must complete and submit the following form.

NPDES FORM 6100-28	EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 ANNUAL REPORT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY UNDER THE NPDES MULTI-SECTOR GENERAL PERMIT	OMB No. 2040-0300 Exp. Date: 3/31/2024

A. Approval to Use Paper Annual Report Form

1. Have you been granted a waiver from electronic reporting from the EPA Regional Office*? ☐ YES ☐ NO

If yes, check which waiver you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted: ☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.

☐ The owner/operator has issues regarding available computer access or computer capability

Name of EPA staff person that granted the waiver:

Date approval obtained: / /

*** Note: You are required to obtain approval from the applicable EPA Regional Office prior to using this paper annual report form. If you have not obtained a waiver, you must file this form electronically using the NPDES eReporting Tool (NeT) at https://www.epa.gov/npdes/stormwater-discharges-industrial-activities**

B. Permit Information

1. NPDES ID:

C. Facility Information

1. Facility Name:

2. Facility Phone: - - Ext.

3. Facility Mailing Address:

Street:

City: State: ZIP Code: -

County or Similar Government Subdivision:

4. Point of Contact:

First Name, Middle Initial, Last Name

D. General Findings

1. Provide a summary of your past year's routine facility inspection documentation, including dates (see Part 3.1.6 of the permit). In addition, if you are an operator of an airport facility (Sector S) that is subject to the airport effluent limitations guidelines, and are complying with the MSGP Part 8.S.8.1 effluent limitation through the use of non-urea-containing deicers, provide a statement certifying that you do not use pavement deicers containing urea (e.g., "Urea was not used at [name of airport] for pavement deicing in the past year and will also not be used in 2021." (Note: Operators of airport facilities that are complying with Part 8.S.8.1 by meeting the numeric effluent limitation for ammonia do not need to include this statement.)

2. Provide a summary of your past year's quarterly visual assessment documentation, including dates (see Part 3.2.3 of the permit).

3. Provide a summary of your past year's corrective action and/or advanced implementation measures (AIM) documentation (See Part 5.1.3 of the permit). (Note: If corrective action is not yet completed at the time of submission of this annual report, you must describe the status of any outstanding corrective action(s).) Note that you must modify your SWPPP based on the corrective actions and deadlines required under Part 5. Also describe any incidents of noncompliance in the past year or currently ongoing, or if none, provide a statement that you are in compliance with the permit.

E. Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle, Last Name

Title:

Signature:_____ Date: / /

E-mail:

Instructions for Completing EPA Form 6100-28
Annual Report for Stormwater Discharges
Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 6100-28 (06/15) OMB No. 2040-0300

Who Must File an Annual Report

Operators must submit an Annual Report to EPA electronically, per Part 7.4, by January 30th for each year of permit coverage containing information generated from the past calendar year.

Completing the Form

To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. Please submit original document with signature in ink - do not send a photocopied signature.

Section A. Approval to Use Paper Annual Report Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA staff person who granted the waiver, and the date that approval was provided. See https://www.epa.gov/npdes/contact-us-stormwater for a list of EPA Regional Office contacts.

Section B. Permit Information

Provide the NPDES ID (i.e., NOI tracking number) assigned to your facility.

Section C. Facility Information

Enter the official or legal name, phone number, and complete street address, including city, state, ZIP code, and county or similar government subdivision, for the facility that is covered by the NPDES ID identified in Section B. If the facility lacks a street address, indicate the general location of the facility (e.g., Intersection of State Highways 61 and 34). Also provide a point of contact name for the facility.

Section D. General Findings

To complete this section you must provide the following information in your annual report:

1. A summary of your past year's routine facility inspection documentation, including inspection dates, required by Part 3.1.6 of the permit.
2. A summary of your past year's quarterly visual assessment documentation, including visual assessment dates, required by Part 3.2.3 of the permit.
3. Information copied or summarized from the corrective action and/or advanced implementation measures (AIM) documentation required per Part 5.1.3 (if applicable). If corrective action and/or advanced implementation measures are not yet completed at the time of submission of this Annual Report, you must describe the status of any outstanding corrective action(s)/advanced implementation measures. You must also describe any incidents of noncompliance in the past year or currently ongoing, or if none, provide a statement that you are in compliance with the permit.

Section E. Certification Information

The Annual Report must be signed by a person described below, or by a duly authorized representative of that person.

For a corporation: By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA). Include the name and title of the person signing the form and the date of signing.

A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above;
2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company, (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and
3. The written authorization is submitted to the Director.

An unsigned or undated Annual Report form will be considered incomplete.

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0300). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 1 hour per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Instructions for Completing EPA Form 6100-28
Annual Report for Stormwater Discharges
Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 6100-28 (06/15) OMB No. 2040-0300

Submitting Your Form

If you have been granted a waiver from your Regional Office to submit a paper Annual Report form, you must send your Annual Report form by mail to one of the following addresses:

For Regular U.S. Mail Delivery:

Stormwater Notice Processing Center
Mail Code 4203M, ATTN: 2020 MSGP Reports
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For Overnight/Express Mail Delivery:

Stormwater Notice Processing Center
William Jefferson Clinton East Building - Room 7420
ATTN: 2020 MSGP Reports
U.S. EPA
1201 Constitution Avenue, NW
Washington, DC 20004

Visit this website for instructions on how to submit electronically:
https://www.epa.gov/npdes/stormwater-discharges-industrial-activities

Appendix J - Calculating Hardness in Freshwater Receiving Waters for Hardness Dependent Metals

Overview

For any sectors required to conduct benchmark samples for a hardness-dependent metal, EPA includes 'hardness ranges' from which benchmark values are determined. To determine which hardness range to use, you must collect data on the hardness of your receiving water(s). Once the site-specific hardness data have been collected, the corresponding benchmark value for each metal is determined by comparing where the hardness data fall within hardness ranges, as shown in Table 1. You only need to determine hardness for your discharges into freshwater as the benchmark values for metals do not vary for discharges to saline waters.

Table 1. ***Hardness Ranges to Be Used to Determine Benchmark Values for Cadmium, Lead, Nickel, Silver, and Zinc.***

All Units (mg/L)	Benchmark Values (µg/L, total)				
	Cadmium	Lead	Nickel	Silver	Zinc
0-24.99	0.49	14	145	0.37	37
25-49.99	0.73	24	203	0.80	52
50-74.99	1.2	45	314	1.9	80
75-99.99	1.7	69	418	3.3	107
100-124.99	2.1	95	518	5.0	132
125-149.99	2.6	123.	614	7.1	157
150-174.99	3.1	152	707	9.4	181
175-199.99	3.5	182	798	12	204
200-224.99	4.0	213	888	15	227
225-249.99	4.4	246	975	18	249
250+	4.7	262	1019	20	260

How to Determine Hardness for Hardness-Dependent Parameters in Freshwater.

You may select one of three methods to determine hardness, including: individual grab sampling, grab sampling by a group of operators which discharge to the same receiving water, or using third-party data. Regardless of the method used, you are responsible for documenting the procedures used for determining hardness values. The hardness value is required to be submitted to EPA with your Notice of Intent (NOI) so that your electronic Discharge Monitoring Report (DMR) which you will submit through Net-DMR will include the appropriate limits. You must retain all report and monitoring data in accordance with Part 7.8 of the permit. The three method options for determining hardness are detailed in the following sections.

i. Permittee Samples for Receiving Stream Hardness

This method involves collecting samples in the receiving water and submitting these to a laboratory for analysis. If you elect to sample your receiving water(s) and submit samples for analysis, hardness must be determined from the closest intermittent or perennial stream downstream of your point of discharge. The sample can be collected during either dry or wet

weather. Collection of the sample during wet weather is more representative of conditions during stormwater discharges; however, collection of in-stream samples during wet weather events may be impracticable or present safety issues.

Hardness must be sampled and analyzed using approved methods as described in 40 CFR Part 136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants).

ii. Group Monitoring for Receiving Stream Hardness

You can be part of a group of permittees discharging to the same receiving waters and collect samples that are representative of the hardness values for all members of the group. In this scenario, hardness of the receiving water must be determined using 40 CFR Part 136 procedures and the results shared by group members. To use the same results, hardness measurements must be taken on a stream reach within a reasonable distance of the discharge points of each of the group members.

iii. Collection of Third-Party Hardness Data

You can submit receiving stream hardness data collected by a third party provided the results are collected consistent with the approved 40 CFR Part 136 methods. These data may come from a local water utility, previously conducted stream reports, TMDLs, peer reviewed literature, other government publications, or data previously collected by the permittee. Data should be less than 10 years old.

Water quality data for many of the nation's surface waters are available on-line or by contacting EPA or a state environmental agency. EPA's data system STORET, short for STOrage and RETrieval, is a repository for receiving water quality, biological, and physical data and is used by state environmental agencies, EPA and other federal agencies, universities, private citizens, and many others. Similarly, state environmental agencies and the U.S. Geological Service (USGS) also have water quality data available that, in some instances, can be accessed online. "Legacy STORET" codes for hardness include: 259 hardness, carbonate; 260 hardness, noncarbonated; and 261 calcium + magnesium, while more recent, "Modern STORET" data codes include: 00900 hardness, 00901 carbonate hardness, and 00902 noncarbonate hardness; or the discrete measurements of calcium (00915) and magnesium (00925) can be used to calculate hardness. Hardness data historically has been reported as "carbonate," "noncarbonate," or "Ca + Mg." If these are unavailable, then individual results for calcium (Ca) and magnesium (Mg) may be used to calculate hardness using the following equation:

$$\text{mg/L } CaCO_3 = 2.497 \text{ (Ca mg/L)} + 4.118 \text{ (Mg mg/L)}$$

When interpreting the data for carbonate and non-carbonate hardness, note that total hardness is equivalent to the sum of carbonate and noncarbonate hardness if both forms are reported. If only carbonate hardness is reported, it is more than likely that noncarbonate hardness is absent and the total hardness is equivalent to the available carbonate hardness.

Appendix K - No Exposure Certification (NEC) Form

Part 7.2 requires you to use the NPDES eReporting Tool, or "NeT", to prepare and submit your No Exposure Certification (NEC) form. However, if you are given a waiver by the EPA Regional Office to use a paper NEC form, and you elect to use it, you must complete and submit the following form.

NPDES FORM 3510-11		UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 NO EXPOSURE CERTIFICATION (NEC) FOR EXCLUSION FROM EPA'S MULTI-SECTOR GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY (MSGP)	OMB No. 2040-0300 Exp. Date: 3/31/2024

Submission of this No Exposure Certification (NEC) constitutes notice that the operator identified in Section C does not require permit authorization under EPA's Stormwater Multi Sector General Permit for its stormwater discharges associated with industrial activity from the facility identified in Section D of this form due to the existence of a condition of no exposure.

A condition of no exposure exists at an industrial facility when all industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. Industrial materials or activities include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products, or waste products. Material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product or waste product. A storm resistant shelter is not required for the following industrial materials and activities:

- drums, barrels, tanks, and similar containers that are tightly sealed, provided those containers are not deteriorated and do not leak. "Sealed" means banded or otherwise secured and without operational taps or valves;
- adequately maintained vehicles used in material handling; and
- final products, other than products that would be mobilized in stormwater discharges (e.g., rock salt).

A NEC must be provided for each facility qualifying for the no exposure exclusion. In addition, the exclusion from NPDES permitting is available on a facility-wide basis only, not for individual outfalls. If any industrial activities or materials are or will be exposed to precipitation, the facility is not eligible for the no exposure exclusion.

By signing and submitting this NEC form, the operator in Section C is certifying that a condition of no exposure exists at its facility or site, and is obligated to comply with the terms and conditions of 40 CFR 122.26(g).

A. Approval to Use Paper NEC Form

1. Have you been granted a waiver from electronic reporting from the EPA Regional Office*? ☐ YES ☐ NO

If yes, check which waiver you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted: ☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.

☐ The owner/operator has issues regarding available computer access or computer capability

Name of EPA staff person that granted the waiver: _____

Date approval obtained: ___ / ___ / ____

*** Note: You are required to obtain approval from the applicable EPA Regional Office prior to using this paper NEC form. If you have not obtained a waiver, you must file this form electronically using the NPDES eReporting Tool (NeT) at https://www.epa.gov/npdes/stormwater-discharges-industrial-activities**

B. Reason for Submission

Select the purpose for filling out this form (check only 1).

☐ **To obtain a new NEC.** Fill in Sections C, D, E and F.

☐ **To discontinue an existing NEC**. Select this option if you would like to discontinue an existing NEC because your facility is no longer subject to regulation under 40 CFR 122.26 (e.g., the facility has ceased the industrial activity that necessitated the NEC)*. Provide the following information and fill out Section G.

Provide the existing NPDES ID for the NEC that you would like to discontinue: _____

1. Are you a new discharger or a new source as defined in Appendix A? ☐ YES ☐ NO (If yes, skip to Part C of this form).

*** Note that if your facility no longer qualifies for the NEC because permit coverage is required for exposed industrial materials or activities, you should not check this box, and must instead file for coverage under the Multi-Sector General Permit (MSGP) or an individual permit. Your NEC will be automatically discontinued after you obtain coverage under the MSGP or an individual permit.**

C. Facility Operator Information

1. Operator Name: _____

2. Mailing Address:

Street: _____

City: _____ State: ___ ZIP Code: _____ - _____

3. Phone: ___ - ___ - ____ Ext. ____

4. E-mail: _____

5. Operator Point of Contact Information:

First Name, Middle Initial, Last Name

Title:

D. Facility Information

1. Facility Name:

2, Facility Address:

Street/Location:

City: State: ZIP Code: -

County or Similar Government Subdivision:

3. Latitude/Longitude for the facility:

Latitude: __ __.__ __ __ __ ° N (decimal degrees) Longitude: __ __ __.__ __ __ __ ° W (decimal degrees)

Latitude/Longitude Data Source: ☐ Maps ☐ GPS ☐ Other _____

If you used a USGS topographic map, what was the scale? _____

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 ☐ WGS 84

4. Is your facility located on Indian Country lands? ☐ YES ☐ NO

If yes, provide the name of the Indian tribe associated with the area of Indian country (including name of Indian reservation, if applicable):

_____

5. Are you a "federal operator" as defined in Appendix A? ☐ YES ☐ NO

6. What is the ownership type of the facility? ☐ Federal Facility (U.S. Government) ☐ Privately Owned Facility ☐ Municipality ☐ County Government ☐ Corporation ☐ State Government ☐ Tribal Government ☐ School District ☐ District ☐ Mixed Ownership (e.g., Public/Private) ☐ Municipal or Water District

7. Have stormwater discharges from your facility been covered previously under an NPDES permit? ☐ YES ☐ NO

If yes, provide the NPDES ID if you had coverage under EPA's MSGP or the NPDES permit number if you had coverage under an EPA individual permit: _____

8. Has your facility previously been covered by a no exposure exclusion? ☐ YES ☐ NO

If yes, provide the NPDES ID for your previous no exposure exclusion: _____

9. Identify the 4-digit Standard Industrial Classification (SIC) code or 2-letter Activity Code that best represents the products produced or services rendered for which your facility is primarily engaged, as defined in the MSGP, and the applicable sector and subsector of your primary industrial activity (See Appendix D):

☐ **Primary SIC Code** **OR** ☐ **Primary Activity Code**

10. Total size of site associated with industrial activity:_____ (to the nearest quarter acre)

11. Have you paved or roofed over a formerly exposed, pervious area in order to qualify for the no exposure exclusion? ☐ YES ☐ NO

If yes, please indicate approximately how much area was paved or roofed over. Completing this question does not disqualify you for the no exposure exclusion. However, your permitting authority may use this information in considering whether stormwater discharges from your site are likely to have an adverse impact on water quality, in which case you could be required to obtain permit coverage.

☐ Less than one (1) acre ☐ One (1) to five (5) acres ☐ More than five (5) acres

E. Exposure Checklist

Are any of the following materials or activities exposed to precipitation, now or in the foreseeable future?

(Please check either "Yes" or "No" in the appropriate box.) **If you answer "Yes" to any of these questions, you are not eligible for the no exposure exclusion.**

	Yes	No
Using, storing or cleaning industrial machinery or equipment, and areas where residuals from using, storing or cleaning industrial machinery or equipment remain and are exposed to stormwater	☐	☐
Materials or residuals on the ground or in stormwater inlets from spills/leaks	☐	☐
Materials or products from past industrial activity	☐	☐
Material handling equipment (except adequately maintained vehicles)	☐	☐
Materials or products during loading/unloading or transporting activities	☐	☐
Materials or products stored outdoors (except final products intended for outside use [e.g., new cars] where exposure to stormwater does not result in the discharge of pollutants)	☐	☐
Materials contained in open, deteriorated or leaking storage drums, barrels, tanks, and similar containers	☐	☐
Materials or products handled/stored on roads or railways owned or maintained by the discharger	☐	☐
Waste material (except waste in covered, non-leaking containers [e.g., dumpsters])	☐	☐
Application or disposal of process wastewater (unless otherwise permitted)	☐	☐
Particulate matter or visible deposits of residuals from roof stacks and/or vents not otherwise regulated (i.e., under an air quality control permit) and evident in the stormwater outflow	☐	☐

F. Certification Information

I certify under penalty of law that I have read and understand the eligibility requirements for claiming a condition of "no exposure" and obtaining an exclusion from NPDES stormwater permitting.

I certify under penalty of law that there are no discharges of stormwater contaminated by exposure to industrial activities or materials from the industrial facility or site identified in this document (except as allowed under 40 CFR 122.26(g)(2)).

I understand that I am obligated to submit a NEC form once every five years to the NPDES permitting authority and, if requested, to the operator of the local municipal separate storm sewer system (MS4) into which the facility discharges (where applicable). I understand that I must allow the NPDES permitting authority, or MS4 operator where the discharge is into the local MS4, to perform inspections to confirm the condition of no exposure and to make such inspection reports publicly available upon request. I understand that I must obtain coverage under an NPDES permit prior to any point source discharge of stormwater from the facility.

Additionally, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle, Last Name:

Title:

Signature:_____ Date: / /

E-mail:

G. Discontinuation of NEC Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle, Last Name

Title:

Signature:_____ Date: / /

E-mail:

Instructions for Completing EPA Form 3510-11

No Exposure Certification (NEC) for Exclusion from Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces Form 3510-11 (06/15) OMB No. 2040-0300

Who May File a No Exposure Certification (NEC) Form

Federal law at 40 CFR Part 122.26 prohibits point source discharges of stormwater associated with industrial activity to waters of the U.S. without a National Pollutant Discharge Elimination System (NPDES) permit. However, NPDES permit coverage is not required for discharges of stormwater associated with industrial activities identified at 40 CFR 122.26(b)(14)(i)-(ix) and (xi) if the discharger can certify that a condition of "no exposure" exists at the industrial facility or site.

Stormwater discharges from construction activities identified in 40 CFR 122.26(b)(14)(x) and (b)(15) are not eligible for the no exposure exclusion.

Obtaining and Maintaining the No Exposure Exclusion

This form is used to certify that a condition of no exposure exists at the industrial facility or site described herein. This certification is only applicable in jurisdictions where EPA is the NPDES permitting authority and must be re-submitted at least once every five years.

The industrial facility operator must maintain a condition of no exposure at its facility or site in order for the no exposure exclusion to remain applicable. If conditions change resulting in the exposure of materials and activities to stormwater, the facility operator must obtain coverage under an NPDES stormwater permit immediately.

Completing the Form

You must type or print, using uppercase letters, in appropriate areas only. Enter only one character per space (i.e., between the marks). Abbreviate if necessary to stay within the number of characters allowed for each item. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. Please submit original document with signature in ink - do not send a photocopied signature. One form must be completed for each facility or site for which you are seeking to certify a condition of no exposure. **Please make sure you have addressed all applicable questions and have made a photocopy for your records before sending the completed form to the above address.**

Section A. Approval to Use Paper NEC Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper NEC form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date that approval was provided. See https://www.epa.gov/npdes/contact-us-stormwater for a list of EPA Regional Office contacts.

Section B. Reason for Submission

You must check your reason for submitting this form. You may submit this form for obtaining a new NEC, for renewing a previous NEC, or for discontinuing an existing NEC (for facilities that no longer need the exclusion from permit coverage for industrial stormwater discharges).

Section C. Facility Operator Information

Provide the legal name of the person, firm, public organization, or any other entity that operates the facility described in this certification form. An operator of a facility is the legal entity that controls the operation of the facility. Refer to Appendix A of the MSGP for the definition of "operator". Provide the operator's mailing address, phone number, and e-mail. Correspondence for the NEC will be sent to this address. Also provide the name and title for the operator point of contact (note that the point of contact name may be the same as the operator name).

Section D. Facility Information

Enter the official or legal name and complete street address, including city, state, ZIP code, and county or similar government subdivision of the facility. If the facility lacks a street address, indicate the general location of the facility (e.g., Intersection of State Highways 61 and 34). Complete facility information must be provided for permit coverage to be granted.

Provide the latitude and longitude of your facility in decimal degrees format. The latitude and longitude of your facility can be determined in several different ways, including through the use of global positioning system (GPS) receivers and U.S. Geological Survey (USGS) topographic or quadrangle maps. Refer to http://transition.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html/ for assistance in providing the proper latitude/longitude format. For consistency, EPA requests that measurements be taken form the approximate center of the facility. Specify which method you used to determine latitude and longitude. If a USGS topographic map is used, specify the scale of the map used. Enter the horizontal reference datum for your latitude and longitude. The horizontal reference datum used on USGS topographic maps is shown on the bottom left corner of USGS topographic maps; it is also available for GPS receivers.

Indicate whether the facility is on Indian country lands, and if so, provide the name of the Indian tribe associated with the area of Indian country (including name of Indian reservation, if applicable).

Indicate whether you are a "federal operator" as defined in Appendix A of the MSGP. Also check the facility's ownership type.

Indicate whether the facility was previously covered under an NPDES stormwater permit. If so, include the NPDES ID (i.e., NOI tracking number).

List the four-digit Standard Industrial Classification (SIC) code or two character activity code that best describes the primary industrial activities performed by your facility.

Enter the total size of the site associated with industrial activity in acres.

Check "Yes" or "No" as appropriate to indicate whether you have paved or roofed over a formerly exposed, pervious area (i.e., lawn, meadow, dirt or gravel road/parking lot) in order to qualify for no exposure. If yes, also indicate approximately how much area was paved or roofed over and is now impervious area.

Instructions for Completing EPA Form 3510-11

No Exposure Certification (NEC) for Exclusion from Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

This Form Replaces From 3510-11 (06/15) Form OMB No. 2040-0300

Section E. Exposure Checklist

Check "Yes" or "No" as appropriate to describe the exposure condition at your facility. If you answer "Yes" to **ANY** of the questions in this section, a potential for exposure exists at your site and you cannot certify to a condition of no exposure. You must obtain (or already have) coverage under an NPDES stormwater permit. After obtaining permit coverage, you can institute modifications to eliminate the potential for a discharge of stormwater exposed to industrial activity, and then certify to a condition of no exposure.

Section F and G. Certification and Discontinuation of NEC Information

The NEC form must be signed as follows:

For a corporation: By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or

For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this Part, a principal executive officer of a federal agency includes (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of EPA). Include the name and title of the person signing the form and the date of signing.

Include the name, title, and e-mail address of the person signing the form and the date of signing.

An unsigned or undated NEC form will not be considered valid.

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0300). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 45 minutes per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Submitting Your Form

If you have been granted a waiver from your Regional Office to submit a paper NEC form, you must send your NEC form by mail to one of the following addresses:

For Regular U.S. Mail Delivery:

Stormwater Notice Processing Center
Mail Code 4203M, ATTN: MSGP No Exposure
U.S. EPA
1200 Pennsylvania Avenue, NW
Washington, DC 20460

For Overnight/Express Mail Delivery:

Stormwater Notice Processing Center
William Jefferson Clinton East Building - Room 7420
ATTN: MSGP No Exposure
U.S. EPA
1201 Constitution Avenue, NW
Washington, DC 20004

Visit this website for instructions on how to submit electronically: https://www.epa.gov/npdes/stormwater-discharges-industrial-activities

Appendix L - List of Tier 3, Tier 2, and Tier 2.5 Waters

EPA's MSGP has special requirements for discharges to waters designated by a state or tribe as Tier 2/2.5 or Tier 3 for antidegradation purposes under 40 CFR 131.12(a). See Parts 1.1.6.2 and 1.1.7.

The list below is provided as a resource for operators who must determine whether they discharge to a Tier 2/2.5 or Tier 3 water. Only Tier 2/2.5 or Tier 3 waters specifically identified by a water quality standard authority (e.g., a state, territory, or tribe) are identified in the table below. Many authorities evaluate the existing and protected quality of the receiving water on a pollutant-by-pollutant basis and determine whether water quality is better than the applicable criteria that would be affected by a new discharger or a new source or an increase in an existing discharge of the pollutant. In instances where water quality is better, the authority may choose to allow lower water quality, where lower water quality is determined to be necessary to support important social and economic development. Permittees are not required to identify those waters which are evaluated on an individual basis.

Permit Number	Areas of Coverage/Where EPA Is Permitting Authority	
MAR050000	**Commonwealth of Massachusetts, except Indian Country lands**	
	Tier 2, Tier 2.5, and 3 waters are identified and listed in the Massachusetts Water Quality Standards 314 CMR 4.00. Surface water qualifiers that correspond with Tier classifications are defined at 314 CMR 4.06(1)(d) and listed in tables and figures at the end of 314 CMR 4.06. See MassDEP's web page at: https://www.mass.gov/doc/314-cmr-400-surface-water-quality-standards/download.	
	Tier 2	Listed as "High Quality Waters", and all wetlands that are not designated as an Outstanding Resource Water
	Tier 2.5	Listed as "Outstanding Resource Water", "Public Water Supply", "Tributary to Public Water Supply", all wetlands bordering Outstanding Resource Waters, and vernal pools
	Tier 3	Defined as "Special Resource Water". Note: No waters have been defined as a Special Resource Water as of the issuance of this permit.

Permit Number	Areas of Coverage/Where EPA Is Permitting Authority	
NHR050000	**State of New Hampshire**	
	Tier 2	All waters are Tier 2 except where listed as impaired for the most current approved assessment cycle. GIS maps are available in cycle specific Surface Water Quality Viewer at:https://nhdes.maps.arcgis.com/apps/webappviewer/index.html?id=aa5a11f8b8c341058fc031701a2fb3c9 and, using the NHDES Assessment Unit ID assigned to the waterbody, referencing the appropriate Watershed Report Card (based on the 305(b)/303(d) Assessment). Waterbodies included in Categories "4A-*" or "5-*" are impaired and therefore not designated as Tier 2 waters. The assessment status of waterbodies is also included in the biennial 303(d) Lists available in spreadsheet and PDF format at: https://www.des.nh.gov/resource-center/publications?keys=303%28d%29+List&purpose=&subcategory=Watershed+Management. As of Effective Date of this Permit, the following assessment cycles are approved for the waterbodies indicated (however, operators must check for any more recently approved cycles at the time of filing an NOI; i.e., the 2020 303(d) List will apply to all waterbodies once approved): For discharges into the following waters, reference the 2012 305(b)/303(d) List: Little Bay, Bellamy River, Upper Piscataqua River, Portsmouth Harbor, Little Harbor/Back Channel and Great Bay assessment zones; and the Upper Portsmouth Harbor, Great Bay Prohib SZ2, and Great Bay-Cond Appr assessment units. For discharges into all other waters, reference the 2018 303(d) List available at: https://www.des.nh.gov/resource-center/publications?keys=2018+status&purpose=&subcategory=Watershed+Management Waterbodies not identified on the list or map are Tier 2. There is no list of Tier 2 or 2.5 waters in New Hampshire. New dischargers and new sources should contact David J. Gray (EPA Region 1's MSGP coordinator at gray.davidj@epa.gov).
	Tier 2.5	There is no list of Tier 2 or 2.5 waters in New Hampshire. New dischargers and new sources should contact David J. Gray (EPA Region 1's MSGP coordinator at gray.davidj@epa.gov).

Permit Number	Areas of Coverage/Where EPA Is Permitting Authority	
	Tier 3	Listed as an Outstanding Resource Water (ORW). Env-Ws 1708.04(a) describes that surface waters of national forests and surface waters designated as "natural" under RSA 483:7-a, I shall be considered outstanding resource waters (ORW). A list of ORWs/Tier 3 waters is available at: https://www.des.nh.gov/resource-center/publications?keys=cgp&purpose=&subcategory=Watershed+Management. If so indicated on this list, review the NHDES OneStop Data Mapper at: https://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx. Waterbodies not identified on the list or map are not ORWs. Env-Wq 1708.04(a) Surface waters of national forests and surface waters designated as "natural" under RSA 483:7-a, shall be considered outstanding resource waters (ORW). The New Hampshire waters listed as ORW can be found along with a list of impaired waters at https://www.des.nh.gov/organization/divisions/water/stormwater/documents/impaired-tmdl-orw-listcgp-msgp.xlsx. New dischargers and new sources should contact David J. Gray (EPA Region 1's MSGP coordinator at gray.davidj@epa.gov).
PRR050000	**Commonwealth of Puerto Rico**	
	Tier 3	Tier III waters are those which are classified as either Class SA or Class SE. Class SA waters are defined as "Coastal waters and estuarine waters of high quality and/or exceptional ecological or recreational value whose existing characteristics shall not be altered, except by natural causes, in order to preserve the existing natural phenomena." Class SA waters include bioluminescent lagoons and bays such as La Parguera and Monsio José on the Southern Coast, Bahía de Mosquito in Vieques, and any other coastal or estuarine waters of exceptional quality of high ecological value or recreational which may be designated by Puerto Rico, through Resolution, as requiring this classification for protection of the waters. Class SE waters are defined as "Surface waters and wetlands of exceptional ecological value, whose existing characteristics should not be altered in order to preserve the existing natural phenomena." Class SE waters include Laguna Tortuguero, Laguna Cartagena and any other surface water bodies of exceptional ecological value as may be designated by Puerto Rico through Resolution.
DCR050000	**District of Columbia**	
	Tier 2/2.5	Rule 1102.4 SPECIAL WATERS OF THE DISTRICT OF COLUMBIA (SWDC): Any segment or segments of the surface waters of the District that are of water quality better than needed for the current use or have scenic or aesthetic importance shall be designated as Special Waters of the District of Columbia (SWDC). Rock Creek and its tributaries and Battery Kemble Creek and its tributaries are considered Special Waters of the District of Columbia (SWDC) under its antidegradation program.
MNR05000I	**Fond du Lac Band of MN Chippewa**	
	Tier 3	Six lakes are presently identified as Tier 3: (1) Dead Fish, (2) Jaskari, (3) Miller (Mud), (4) Perch, (5) Rice Portage, (6) Wild Rice.

Permit Number	Areas of Coverage/Where EPA Is Permitting Authority	
	Grand Portage Band of MN Chippewa	
	Tier 2/2.5	All waters, not already classified as Tier 3, are high quality Tier 2 waters. (see Grand Portage Reservation Water Quality Standards, Section VI & VII, Pages 14-16).
	Tier 3	"The portion of Lake Superior north of latitude 47 degrees, 57 minutes, 13 seconds, east of Hat Point, south of the Minnesota-Ontario boundary, and west of the Minnesota-Michigan boundary." (see Section VII, Page 16).
WIR05000I	**Lac du Flambeau Band of the Lake Superior Chippewa**	
	Tier 2	All named waters, including wetlands, not specified under an antidegradation classification.
	Tier 2.5	Bills Lake, Birch Lake, Bobidosh Lake, Bog Lake (SE SE Sec. 31, T40NR6E), Bolton Lake, Broken Bow Lake, Chewalah Lake, Clear Lake (Sec. 2, T39NR4E), Corn Great, Great, Corn Lake, Little "Least/Lesser", Crawling Stone Lake, Big, Crawling Stone Lake, Little, Crescent Lake, Crooked Lake, Big, David Lake, Ellerson Lake, Middle, Ellerson Lake, West, Elsie Lake "Boundary Lake", Fat Lake, Fence Lake, Gresham
		Creek, Green Lake (NW NW Sec. 19, T41R6E), Grey Lake, Gunlock Lake, Haskell Lake, Headflyer Lake (Sec. 19, T41NR5E), Highway Lake (NW NW Sec. 19, T41NR5E), Horsehead Lake (SE SW Sec. 9, T40NR5E), Hutton's Creek, Ike Walton Lake, Lily Lake (SE SW Sec. 35, T40NR5E), Little Ten Lake, Lodge Lake "L. Rice" (NW NW Sec. 8, T41NR6E), Lucy Lake, Mindys Lake (Sec. 8, T40NR5E), Minette Lake, Mitten Lake, Monk's Lake (Sec. 13, T40NR5E), Moving Cloud Lake, Mud Creek, Muskesin Lake, Patterson Lake, Placid Twin Lake (North), Placid Twin Lake (South), Plummer Lake, Poupart Lake, Prairie Lake (NE SW Sec. 13, T40NR4E), Raven Lake, Ross Allen Lake, Sand Lake, Little, Scott Lake (Sec. 22, T40N, R4E), Shishebogama Lake, Signal Lake, Snort Lake (Sec. 5, T41N, R6E), Spring Lake "Jerms", Squirrel Lake, Statenaker Lake "Hollow", Stearns Lake "Hourglass", Sugarbush "Hidden Lake" (NW NW Sec. 17, T41NR5E), Sugarbush Creek, Sugarbush Lake, Little, Sugarbush Lake, Lower, Sugarbush Lake, Middle, Sugarbush Lake, Upper, Sunfish Lake, Tippecanoe Lake, Tomahawk River, To-To Tom Lake, Toulish Lake, Trout River, Warrior Lake, White Sand Lake, Whitefish Lake "Cattail Lake" (Sec. 34, T40N5R), Wishow Lake, Wyandock Lake
	Tier 3	Bear River (1st bridge to Reservation boundary), Big Springs (Sec. 25, T40NR4E), Black Lake, Cranberry Lake, Doud Lake, Eagle Lake, Gene Lake, Johnson Springs, Little Trout Lake, Lost Lake (Sect. 1, T41NR4E), Mishonagon Creek, Munnomin (Jesse, Duck) Lake, Negani (Hegani) Lake, Reservation Line Lake, Spring Creek, Tank Lake, Thomas Lake, Wild Rice Lake, Zee Lake
	Mole Lake Band of the Lake Superior Tribe of the Chippewa Indians, Sokaogon Chippewa Community	
	Tier 2.9	One Tribal Water, Wetland 22, is classified as Exceptional High Quality Water (EHQW). It is a high-quality water body of significant cultural, religious, social, ecological and recreational attributes.
	Tier 3	All waters in the Sokaogon Chippewa Community (WI) as classified as Tier 3, with one exception (Wetland 22).

Permit Number	Areas of Coverage/Where EPA Is Permitting Authority	
COR0500I	**State of Colorado**	
	Ute Mountain Ute Tribe	
	Tier 3	(2010 Proposed) Designations: (1) Ute Spring and unnamed creek from Ute Spring downstream within Section 12, TWP35N R18W (Colorado). (2) Allen Canyon Creek, Sections 17, 20, 29, 30, 31, TWP 35S, R21E (Utah) (3) "Lopez" Spring and unnamed creek tributary to and downstream from the spring, within Section 35, TWP 34N, R18W
NMR050000	**State of New Mexico**	
	Tier 3	(1) Rio Santa Barbara, including the west, middle and east forks from their headwaters downstream to the boundary of the Pecos Wilderness; and (2) the waters within the United States forest service Valle Vidal special management unit including: (a) Rio Costilla, including Comanche, La Cueva, Fernandez, Chuckwagon, Little Costilla, Holman, Gold, Grassy, LaBelle and Vidal creeks, from their headwaters downstream to the boundary of the United States forest service Valle Vidal special management unit; (b) Middle Ponil creek, including the waters of Greenwood Canyon, from their headwaters downstream to the boundary of the Elliott S. Barker wildlife management area; (c) Shuree lakes; (d) North Ponil creek, including McCrystal and Seally Canyon creeks, from their headwaters downstream to the boundary of the United States forest service Valle Vidal special management unit; and (e) Leandro creek from its headwaters downstream to the boundary of the United States forest service Valle Vidal special management unit. (3) the named perennial surface waters of the state, identified in Subparagraph (a) below, located within United States department of agriculture forest service wilderness. Wilderness are those lands designated by the United States congress as wilderness pursuant to the Wilderness Act. Wilderness areas included in this designation are the Aldo Leopold wilderness, Apache Kid wilderness, Blue Range wilderness, Chama River Canyon wilderness, Cruces Basin wilderness, Dome wilderness, Gila wilderness, Latir Peak wilderness, Pecos wilderness, San Pedro Parks wilderness, Wheeler Peak wilderness, and White Mountain wilderness. (a) The following waters are designated in the Rio Grande basin: (i) in the Aldo Leopold wilderness: Byers Run, Circle Seven creek, Flower canyon, Holden Prong, Indian canyon, Las Animas creek, Mud Spring canyon, North Fork Palomas creek, North Seco creek, Pretty canyon, Sids Prong, South Animas canyon, Victorio Park canyon, Water canyon; (ii) in the Apache Kid wilderness Indian creek and Smith canyon; (iii) in the Chama River Canyon wilderness: Chavez canyon, Ojitos canyon, Rio Chama; (iv) in the Cruces Basin wilderness: Beaver creek, Cruces creek, Diablo creek, Escondido creek, Lobo creek, Osha creek; (v) in the Dome wilderness: Capulin creek, Medio creek, Sanchez canyon/creek; (vi) in the Latir Peak wilderness: Bull creek, Bull Creek lake, Heart lake,

Permit Number	Areas of Coverage/Where EPA Is Permitting Authority	
		Lagunitas Fork, Lake Fork creek, Rito del Medio, Rito Primero, West Latir creek; (vii) in the Pecos wilderness: Agua Sarca, Hidden lake, Horseshoe lake (Alamitos), Jose Vigil lake, Nambe lake, Nat lake IV, No Fish lake, North Fork Rio Quemado, Rinconada, Rio Capulin, Rio de las Trampas (Trampas creek), Rio de Truchas, Rio Frijoles, Rio Medio, Rio Molino, Rio Nambe, Rio San Leonardo, Rito con Agua, Rito Gallina, Rito Jaroso, Rito Quemado, San Leonardo lake, Santa Fe lake, Santa Fe river, Serpent lake, South Fork Rio Quemado, Trampas lake (East), Trampas lake (West); iii) in the San Pedro Parks wilderness: Agua Sarca, Cañon Madera, Cave creek, Cecilia Canyon creek, Clear creek (North SPP), Clear creek (South SPP), Corralitos creek, Dove creek, Jose Miguel creek, La Jara creek, Oso creek, Rio Capulin, Rio de las Vacas, Rio Gallina, Rio Puerco de Chama, Rito Anastacio East, Rito Anastacio West, Rito de las Palomas, Rito de las Perchas, Rito de los Pinos, Rito de los Utes, Rito Leche, Rito Redondo, Rito Resumidero, San Gregorio lake; (ix) in the Wheeler Peak wilderness: Black Copper canyon, East Fork Red river, Elk lake, Horseshoe lake, Lost lake, Sawmill creek, South Fork lake, South Fork Rio Hondo, Williams lake. (b) The following waters are designated in the Pecos River basin: (i) in the Pecos wilderness: Albright creek, Bear creek, Beatty creek, Beaver creek, Carpenter creek, Cascade canyon, Cave creek, El Porvenir creek, Hollinger creek, Holy Ghost creek, Horsethief creek, Jack's creek, Jarosa canyon/creek, Johnson lake, Lake Katherine, Lost Bear lake, Noisy brook, Panchuela creek, Pecos Baldy lake, Pecos river, Rio Mora, Rio Valdez, Rito Azul, Rito de los Chimayosos, Rito de los Esteros, Rito del Oso, Rito del Padre, Rito las Trampas, Rito Maestas, Rito Oscuro, Rito Perro, Rito Sebadilloses, South Fork Bear creek, South Fork Rito Azul, Spirit lake, Stewart lake, Truchas lake (North), Truchas lake (South), Winsor creek; (ii) in the White Mountain wilderness: Argentina creek, Aspen creek, Bonito creek, Little Bonito creek, Mills canyon/creek, Rodamaker creek, South Fork Rio Bonito, Turkey canyon/creek. (c) The following waters are designated in the Gila River basin: (i) in the Aldo Leopold wilderness: Aspen canyon, Black Canyon creek, Bonner canyon, Burnt canyon, Diamond creek, Falls canyon, Fisherman canyon, Running Water canyon, South Diamond creek; (ii) in the Gila wilderness: Apache creek, Black Canyon creek, Brush canyon, Canyon creek, Chicken Coop canyon, Clear creek, Cooper canyon, Cow creek, Cub creek, Diamond creek, East Fork Gila river, Gila river, Gilita creek, Indian creek, Iron creek, Langstroth canyon, Lilley canyon, Little creek, Little Turkey creek, Lookout canyon, McKenna creek, Middle Fork Gila river, Miller Spring canyon, Mogollon creek, Panther canyon, Prior creek, Rain creek, Raw Meat creek, Rocky canyon, Sacaton creek, Sapillo creek, Sheep Corral canyon, Skeleton canyon, Squaw creek, Sycamore canyon, Trail canyon, Trail creek, Trout creek, Turkey creek, Turkey Feather creek, Turnbo canyon, West Fork Gila river, West Fork Mogollon creek, White creek, Willow creek, Woodrow canyon. (d) The following waters are designated in the Canadian River basin: in the Pecos wilderness Daily creek, Johns canyon, Middle Fork Lake of Rio de la Casa, Middle Fork Rio de la Casa, North Fork Lake of Rio de la Casa, Rito de Gascon, Rito San Jose, Sapello river, South Fork Rio de la

Permit Number	Areas of Coverage/Where EPA Is Permitting Authority	
		Casa, Sparks creek (Manuelitas creek). (e) The following waters are designated in the San Francisco River basin: (i) in the Blue Range wilderness: Pueblo creek; in the Gila wilderness: Big Dry creek, Lipsey canyon, Little Dry creek, Little Whitewater creek, South Fork Whitewater creek, Spider creek, Spruce creek, Whitewater creek. (f) The following waters are designated in the Mimbres Closed basin: in the Aldo Leopold wilderness Corral canyon, Mimbres river, North Fork Mimbres river, South Fork Mimbres river. (g) The following waters are designated in the Tularosa Closed basin: in the White Mountain wilderness Indian creek, Nogal Arroyo, Three Rivers. (h) The wetlands designated are identified on the maps and list of wetlands within United States forest service wilderness areas designated as outstanding national resource waters published at the New Mexico state library and available on the department's website.
CAR05000I	**Hualapai Tribe**	
	Tier 3	Spencer, Meriwhitica, Willow Spring, Upper Milkweed Spring, Bridge Canyon, Travertine Spring, Travertine Falls, Diamond Creek, Diamond Creek Spring, Blue Mountain, Metuck, Peach Springs Spring, Westwater, Clay Tank, Hockey Puck, Pocamote Spring, Mohawk Spring, Granite Spring, Three Spring, Warm Spring, Honga Spring, National Canyon Spring, National Canyon, Moss Spring
	White Mountain Apache Tripe of the Fort Apache Indian Reservation	
	Tier 2/2.5	East Fork White River, above R52 Road, East Fork White River below R52 Road, above Rock Cr., Paradise Creek, above Wohlenberg, Ord Creek, Smith Cienega, Bull Cienega, Smith Creek, Big Bonito , Tonto Creek, below Y47 Crossing, Crooked Creek, Boggy Creek, Lofer Cienego Creek, Little Bonito Creek, above Y55 Crossing, Flash Creek, Squaw Creek, Hurricane Lake, Hurricane Creek, Hughey Creek, Bonito Cienega, West Fork Black River, Hall Cienega, Purcell Cienega, Thompson Creek, Carrizo Creek below Corduroy, Carrizo Creek above Corduroy, Cedar Creek, Big Canyon (E. Cedar Creek), Middle Cedar Creek, West Cedar Creek, Cibecue Creek in Box Canyon to Salt river, Cibecue Creek, Box CallYon up to confluence with Salt Creek, Spring Creek, Salt Creek, Cibecue Creek, from confluence w/Salt Cr, to Big Springs, Cibecue Creek, above Big Springs, Rock Springs Creek, Salt Draw, Canyon Creek S. of Chediski Farms, Willow Creek (Lower Canyon Cr), Oak Creek, Canyon Creek. N. of Chedlski Fanns,
	Tier 3	East Fork While River, in Wilderness Area, Pumpkin Lake
IDR050000	**State of Idaho**	
	For Tier 2 and Tier 3 waters, please consult the Idaho Integrated Report, available at: http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report.aspx and the closest regional office of the Idaho Department of Environmental Quality: http://www.deq.idaho.gov/regional-offices-issues.aspx.	

Appendix M - Discharge Monitoring Report (DMR) Form

Part 7.2 requires you to use the electronic DMR system to prepare and submit your Discharge Monitoring Report (DMR) form. However, if you are given approval by the EPA Regional Office to use a paper DMR form, and you elect to use it, you must complete and submit the following form.

NPDES FORM 6100-29	EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 MSGP INDUSTRIAL DISCHARGE MONITORING REPORT (DMR) FORM	OMB No. 2040-0300 Exp. Date: 3/31/2024

A. Approval to Use Paper NOI Form

1. Have you been granted a waiver from electronic reporting from the EPA Regional Office*? ☐ YES ☐ NO

If yes, check which waiver you have been granted, the name of the EPA Regional Office staff person who granted the waiver, and the date of approval:

Waiver granted:
- ☐ The owner/operator's headquarters is physically located in a geographic area (i.e., ZIP code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission.
- ☐ The owner/operator has issues regarding available computer access or computer capability

Name of EPA staff person that granted the waiver:

Date approval obtained: / /

*** Note: Note: You are required to obtain approval from the applicable EPA Regional Office prior to using this paper DMR form. If you have not obtained a waiver, you must file this form electronically using the NetDMR at http://www.epa.gov/netdmr/**

1. NPDES ID:

2. Reason(s) for Submission (Check all that apply):

- ☐ Submitting monitoring data (Fill in all Sections).
- ☐ Reporting no discharge for all discharge points for this monitoring period (Fill in Sections A, B, C, D, E.1, and G).
- ☐ Reporting that your site status has changed to inactive and unstaffed and there are no industrial materials or activities exposed to stormwater (Fill in Sections A, B, C, D, and F.4 (include date of status change in comment field).
- ☐ Reporting that your site status has changed to active and/or there are industrial materials or activities exposed to stormwater (Fill in all Sections and include date of status change in comment field in Section F.4).

1. Operator Information:

Operator Name:

Mailing Address:

Street:

City: State: ZIP Code: -

Phone: - - Ext.

E-mail:

2. DMR Preparer (Complete if DMR was prepared by someone otherthan the certifier):

First Name, Middle Initial, Last Name

Organization:

Phone: - - Ext.

E-mail:

D. Facility Information

1. Facility Name:

2, Facility Address:

Street/Location:

City: State: ZIP Code: -

County or Similar Government Subdivision:

E. Discharge Information

1. Identify monitoring period: ☐ Check here if proposing alternative monitoring periods due to irregular stormwater runoff. Identify alternative monitoring schedule and indicate for which alternative monitoring period you are reporting monitoring data:

☐ Quarter 1 (January 1 – March 31)	☐ Quarter 1:	From / To /
☐ Quarter 2 (April 1 – June 30)	☐ Quarter 2:	From / To /
☐ Quarter 3 (July 1 – September 30)	☐ Quarter 3:	From / To /
☐ Quarter 4 (October 1 – December 31)	☐ Quarter 4:	From / To /

2. Are you required to monitor for cadmium, chromium, lead, nickel, silver, or zinc in freshwater? ☐ YES (Skip to 3) ☐ NO (Skip to 4)

3. What is the hardness level of the receiving water? (mg/L)

4. Does your facility discharge into any saltwater receiving waters? ☐YES ☐NO

EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 MSGP INDUSTRIAL DISCHARGE MONITORING REPORT (DMR) FORM	OMB No. 2040-0300

F. Monitoring Information **Note: Make additional copies of this form asnecessary.**

1. Nature of Discharge: ☐ Rainfall (Complete line items 2.a., 2.b., & 2.c.) ☐ Snowmelt

2.a. Duration of the rainfall event (hours): ☐☐ 2.b. Rainfall amount (inches): ☐☐.☐ 2.c. Time since previous measurable storm event (days): ☐☐☐

3.a. Discharge Point ID (list the same 3-digit discharge points identified on the NOI form	3.b. Check if Any Discharge Points are Substantially Identical to Other Discharge Points Listed	3.c. Check if No Discharge	3.d. Monitoring Type IM, BM, ELG, S/T, I, O*	3.e. Parameter	3.f. Quantity or Concentration	3.g. Units	3.h. Results Description	3.i. Collection Date	3.j. Exceedance solely attributable to natural background pollutant levels per Part 5.2.6.1	3.k. Exceedance due to run-on per Part 5.2.6.2	3.l Exceedance due to an abnormal event per 5.2.6.3	3.m Exceedance but discharge does not result in any exceedance of water quality standards per Part 5.2.6.5	3.n Aluminum Exceedance demonstrated to not result in an exceedance of your facility-specific criteria per Part 5.2.6.4.a	3.o Copper Exceedance demonstrated to not result in an exceedance of your facility-specific criteria per Part 5.2.6.4.b
	☐ Substantially identical to discharge point: ____	☐									☐	☐	☐	☐
	☐ Substantially identical to discharge point: ____	☐									☐	☐	☐	☐
	☐ Substantially identical to discharge point: ____	☐									☐	☐	☐	☐
	☐ Substantially identical to discharge point: ____	☐									☐	☐	☐	☐

* IM - Indicator monitoring; BM - Benchmark monitoring; (ELG) - Annual effluent limitations guidelines monitoring; (S/T) - State- or tribal-specific monitoring; (I) - Impaired waters monitoring; (O) - Other monitoring as required by EPA

4. Comment and/or Explanation of Any Violations (Reference all attachments here)

G. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle, Last Name

Title:

Signature: _____ Date: / /

E-mail:

Instructions for Completing EPA Form 6100-29

Discharge Monitoring Report (DMR) for Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

OMB No. 2040-0300

Who Must Submit A Discharge Monitoring Report to EPA?

Facilities covered under EPA's NPDES Stormwater Multi-Sector General Permit (MSGP or permit) that are required to monitor pursuant to Parts 4.2 and 8 of the permit must submit Discharge Monitoring Reports (DMRs) consistent with the reporting requirements specified in Part 7.1 of the permit.

Completing the Form

Obtain and read a copy of the 2021 MSGP, viewable at https://www.epa.gov/npdes/stormwater-discharges-industrial-activities To complete this form, type or print, using uppercase letters, in the appropriate areas only. Please place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use only one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response. Please submit original document with signature in ink - do not send a photocopied signature. **Photocopy your DMR form for your records before you send the completed original form to the appropriate address.**

Section A. Approval to Use Paper DMR Form

You must indicate whether you have been granted a waiver from electronic reporting from the EPA Regional Office. Note that you are not authorized to use this paper DMR form unless the EPA Regional Office has approved its use. Where you have obtained approval to use this form, indicate the waiver that you have been granted, the name of the EPA staff person who granted the waiver, and the date that approval was provided. See https://www.epa.gov/npdes/contact-us-stormwater for a list of EPA Regional Office contacts.

Section B. Permit Information

Provide the NPDES ID (i.e., NOI tracking number) assigned to the facility for which this DMR is being submitted.

Indicate your reason(s) for submitting this DMR by checking all boxes that apply. The reasons for submission are defined as follows:

- *Submitting monitoring data*: For each storm sampled, submit one DMR form with data for all discharge points sampled. Select this reason even if you only have monitoring data for some of your discharge points (i.e., some discharge points did not discharge). If you select this reason you are required to complete all Sections of the form.
- *Reporting no discharge for all discharge points for this monitoring period*: Indicates that there were no discharges from all discharge points during this monitoring period. If you select this reason you are only required to complete Sections A, B, C, D, E.1, and G.
- *Reporting that your site status has changed to inactive and unstaffed* and there are no industrial materials or activities exposed to stormwater: Indicates that your facility is currently inactive and unstaffed and there are no industrial materials or activities exposed to stormwater (See Part 4.2.1.3 of the permit for more information). If you select this reason you are only required to complete Sections A, B, C, D, and F.4 (include date of status change in comment field).
- *Reporting that your site status has changed from inactive to active* and/or there are industrial materials or activities exposed to stormwater: Indicates that your facility is currently active (See Part 4.2.1.3 of the permit for more information). If you select this reason you are required to complete all Sections of the form and include date of status change in the comment field in Section F.4.

Section C. Facility Operator Information.

Provide the legal name of the person, firm, public organization, or any other entity that operates the facility for which this DMR is being submitted. An operator of a facility is the legal entity that controls the operation of the facility. Refer to Appendix A of the permit for the definition of "operator". Provide the operator's mailing address, phone number, and e-mail. The operator information in this Section should match the operator information provided on your NOI form.

Provide the name, organization, phone number, an e-mail address for the person who prepared this DMR form.

Section D. Facility Information

Enter the official or legal name and complete street address, including city, state, ZIP code, and county or similar government subdivision of the facility. If the facility lacks a street address, indicate the general location of the facility (e.g., Intersection of State Highways 61 and 34). Complete facility information must be provided for permit coverage to be granted. The facility information in this Section should match the facility information provided on your NOI form.

Section E. Discharge Information.

Indicate the appropriate monitoring period (Quarter 1, 2, 3, or 4) covered by the DMR. "Alternative" monitoring periods can apply to facilities located in arid and semi-arid climates, or in areas subject to snow or prolonged freezing. To use alternative monitoring periods, you must provide a revised monitoring schedule here. If using alternative monitoring periods, identify the first day of the monitoring period through the last day of the monitoring period for each of the four periods. The dates should be displayed as month (Mo) / day (Day). See Parts 4.1.6 and 4.1.7 of the permit for more information.

If you are submitting benchmark monitoring data, identify if your facility is required to collect benchmark samples for one or more hardness-dependent metals (i.e., cadmium, lead, nickel, silver, and zinc). If you select "yes" to this question provide the hardness level of the receiving water (in mg/L)). If you select "no" to this question, you must identify if your facility discharges into any saltwater receiving waters.

Instructions for Completing EPA Form 6100-29

Discharge Monitoring Report (DMR) for Stormwater Discharges Associated with Industrial Activity Under the NPDES Multi-Sector General Permit

OMB No. 2040-0300

Section F. Monitoring Information

For the reported monitoring event indicate whether the discharge was from a rainfall or snowmelt event. If you select "rainfall" then indicate the duration (in hours) of the rainfall event, rainfall total (in inches) for that rainfall event, and time (in days) since the previous measurable storm event in line items 2.a-c. For both rainfall and snowmelt monitoring, you must identify the date of collection for the monitoring event in column 3.i. of the table. If the discharge occurs during a period of both rainfall and snowmelt, check both the rainfall and snowmelt boxes and report the appropriate rainfall information in item 2.a-c. To report multiple monitoring events in the same reporting period, copy this form and enter each monitoring event separately with data for all discharge points sampled.

Identify all the discharge points from your facility that discharge stormwater. Each discharge point must be assigned a unique 3-digit number (e.g., 001, 002, 003), and should match the discharge points identified on your NOI form.

If any discharge points are substantially identical, check the box in 3.b and identify the discharge point that the discharge point in 3.a is substantially identical to. In 3.d – k, you only need to provide benchmark monitoring data for one of the discharge points if it is substantially identical.

For any discharge point for which there was no discharge during the monitoring period, check the box in 3.c.

In 3.d, identify the type of monitoring using the specified codes, in parentheses, below:

- (IM) – Indicator monitoring
- (BM) – Benchmark monitoring
- (ELG) – Annual effluent limitations guidelines monitoring;
- (S/T) – State- or Tribal-specific monitoring;
- (I) – Impaired waters monitoring; or
- (O) – Other monitoring as required by EPA.

In 3.e, enter each "parameter" (or "pollutant") monitored. For BM and ELG monitoring, use the same parameter name as in Part 8 of the permit.

In 3.f., enter a sample measurement value for each parameter analyzed and required to be reported. Enter "ND" (i.e., not detected) for any sample results below the method detection limit or "BQL" (i.e., below quantitation limit) for sample results above the detection limit but below the quantitation limit.

In 3.g., enter the units for sample measurement values (i.e., "mg/L" for milligrams per liter) for each parameter analyzed and required to be reported. For monitoring results reported as ND or BQL this space will be left blank and the units will be reported in Column 3.f.

3.h. must be completed for any monitoring results reported as ND or BQL in the "Quality or Concentration" column. For ND, report the laboratory detection level and units in this column. For BQL, report the laboratory quantitation limit and units in this column.

In 3.i. identify the sampling date for each parameter monitoring result reported on this form.

3.j. *Exceedance solely attributable to natural background pollutant levels:* Check box if following the first 4 quarters of benchmark monitoring (or sooner if the exceedance is triggered by less than 4 quarters of data) you have determined that the exceedance of the benchmark is attributable solely to the presence of that pollutant in the natural background for that discharge point and any substantially identical discharge points, or for impaired waters monitoring, the presence of the pollutant is caused solely by natural background, provided that all of the conditions in Part 5.2.6.1 are met.

3.k *Exceedance due to run-on:* Check box if you can demonstrate and obtain EPA agreement that run-on from a neighboring source (e.g., a source external to your facility) is the cause of the exceedance, provided that the conditions in Part 5.2.6.2 are met.

3.l. *Exceedance due to an abnormal event:* Check box if one single sampling event is abnormal and you have immediately documented per Part 5.3 that the single event was abnormal and met all other conditions in Part *5.2.6.3.*

3.m. *Exceedance but discharge does not result in any exceedance of water quality standards per Part 5.2.6.5: Check box if you can* demonstrate through an analysis that an exceedance triggering AIM requirements does not result in any exceedance of applicable water quality standards, *provided that all the conditions in Part 5.2.6.5 are met.*

3.n *Aluminum exceedance demonstrated to not result in an exceedance of your facility-specific criteria per Part 5.2.6.4.a:* Check box if you can demonstrate through an analysis that an aluminum exceedance does not result in an exceedance of your facility-specific criteria using the national recommended water quality criteria in-lieu of the applicable MSGP benchmark threshold.

3.o *Copper exceedance demonstrated to not result in an exceedance of your facility-specific criteria per Part 5.2.6.4.b:* Check box if you can demonstrate through an analysis that a copper exceedance does not result in an exceedance of your facility-specific criteria using the national recommended water quality criteria in-lieu of the applicable MSGP benchmark threshold.

Where violations of the permit requirements are reported, include a brief explanation to describe the cause and corrective actions taken, and reference each violation by date. Also, this section should include any additional comments such as are required when changing site status from inactive and unstaffed to active or vice versa. Attach additional pages if you need more space.

Attach additional copies of Section F as necessary to address all discharge points and parameters.

Section G. Certification Information

DMRs must be signed by a person described below, or by a duly authorized representative of that person.

For a corporation: By a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated

Appendix O - Summary of Reports Permit Submittals

Permit Section	Applicable Operator	Report/Submittal	Frequency	Due Date(s)	Where to Submit
Part 1.1.4	Only for operators seeking coverage under Part 1.1.4 eligibility criterion C3	**Procedures Relating to Endangered Species Protection Appendix E Criterion C3 Eligibility Form**: Submittal of Criterion C Form	Once, if applicable	At the same time as the NOI for permit coverage is submitted (an additional 30 calendar day review period will apply)	Electronically using the NPDES eReporting Tool (NeT) for MSGP
Part 1.3	**Operator operating consistent with EPA's No Action Assurance and submitted an Intent to Operate (ITO) form** [Operators of industrial activities who commenced discharging between June 4, 2020 and March 1, 2021 and have been operating consistent with EPA's June 3, 2020 'No Action Assurance for the NPDES Stormwater Multi-Sector General Permit for Industrial Activities.']	Submittal of Notice of Intent (NOI)	Once per permit term	As soon as possible, but see the June 3, 2020 'No Action Assurance for the NPDES Stormwater Multi-Sector General Permit for Industrial Activities' (and any updates to that document) for additional guidance on deadlines.	Electronically using the NPDES eReporting Tool (NeT for MSGP
Part 1.3	**New facility without MSGP coverage** (Operators of industrial activities that will commence discharging after March 1, 2021)	Submittal of Notice of Intent (NOI)	Once per permit term	At least 30 calendar days prior to commencing discharge	Electronically using the NPDES eReporting Tool (NeT) for MSGP
Part 1.3	**Existing MSGP facility** [Operators of industrial activities whose stormwater discharges were covered under the 2015 MSGP]	Submittal of Notice of Intent (NOI)	Once per permit term	No later than May 30, 2021. However, if you have not previously obtained coverage under an NPDES permit, you must submit your NOI immediately.	Electronically using the NPDES eReporting Tool (NeT) for MSGP

Permit Section	Applicable Operator	Report/Submittal	Frequency	Due Date(s)	Where to Submit
Part 1.3	**Existing facility covered under an alternative permit** [Operators seeking coverage for stormwater discharges previously covered under an individual permit or an alternative general permit]	Submittal of Notice of Intent (NOI)	Once per permit term	At least 30 calendar days prior to commencing discharge	Electronically using the NPDES eReporting Tool (NeT) for MSGP
Part 1.3	**Existing MSGP facility with a new operator** [New operators of existing industrial activities with stormwater discharges previously authorized under the 2021 MSGP]	Submittal of Notice of Intent (NOI)	Once per permit term	At least 30 calendar days prior to the date of transfer of control to the new operator.	Electronically using the NPDES eReporting Tool (NeT) for MSGP
Part 1.3	**Existing facility without MSGP coverage** [Operators of industrial activities that commenced discharging prior to March 1, 2021, but whose stormwater discharges were not covered under the 2015 MSGP or another NPDES permit and have not been operating consistent with EPA's No Action Assurance for EPA's NPDES MSGP]	Submittal of Notice of Intent (NOI)	Once per permit term	Immediately; your stormwater discharges are currently unpermitted.	Electronically using the NPDES eReporting Tool (NeT) for MSGP

Permit Section	Applicable Operator	Report/Submittal	Frequency	Due Date(s)	Where to Submit
Part 1.3.4	**An operator needing to correct or update any NOI fields**	Submittal of a Change NOI	As applicable	For existing operator, within 30 calendar days after the change occurs. Within 30 calendar days of the transfer in operator or a new operator taking over operational control at an existing facility, the new operator must submit a new NOI. No later than 30 calendar days after MSGP coverage becomes active for the new operator, the previous operator must submit a Notice of Termination (NOT) per Part 1.4.	Electronically using the NPDES eReporting Tool (NeT) for MSGP
Part 1.4	**An operator seeking to terminate their permit coverage under the 2021 MSGP**	Notice of Termination	Once, if applicable	Within 30 days after: • a new operator takes over responsibility for the facility; or • operations and stormwater discharges have ceased; or • for Sector G, H, or J facilities, the applicable termination requirements have been met; or • alternative permit coverage has been obtained	Electronically using the NPDES eReporting Tool (NeT) for MSGP

Permit Section	Applicable Operator	Report/Submittal	Frequency	Due Date(s)	Where to Submit
Part 1.5	**An eligible operator seeking an exclusion from NPDES permitting per 40 CFR 122.26(g)**	Conditional "No Exposure" Certification Form (NEC)	If eligible, once every 5 years	As necessary	Electronically using the NPDES eReporting Tool (NeT) for MSGP
Part 3.1.6	**All operators, unless eligible for an exception**	Routine Inspection Documentation	At least quarterly	By the end of the quarter	Reports are kept with SWPPP
Part 3.2.3	**All operators, unless eligible for an exception**	Quarterly Visual Assessment Documentation	At least quarterly	By the end of the quarter	Reports are kept with SWPPP
Part 5.3	**Operators that must perform corrective action or Additional Implementation Measures per Parts 5.1 and 5.2**	Corrective Action and AIM Documentation	• Document existence of corrective action/AIM condition within 24 hours of becoming aware of the condition; • Document corrective actions/AIMs taken or to be taken within 14 days from the time of discovery of the condition.	As necessary	Reports are kept with SWPPP
Part 6 Part 7.3	**All operators**	**Stormwater Pollution Prevention Plan (SWPPP)**	• Attach SWPPP to NOI, provide URL for SWPPP, or provide SWPPP information directly on the NOI form. • Update the on-site SWPPP as site conditions indicate. At minimum, the SWPPP must be modified based on corrective actions and deadlines required under Part 5.	Develop initial SWPPP prior to the submittal of NOI form. Update the SWPPP information included in attachment to NOI, on URL, or on NOI form, at a minimum, no later than 45 days after conducting the final routine facility inspection for the year.	Electronically using the NPDES eReporting Tool (NeT) for MSGP

Permit Section	Applicable Operator	Report/Submittal	Frequency	Due Date(s)	Where to Submit
Part 4 Part 7.4	**All operators**	Discharge Monitoring Reports (DMRs)	• Indicator Monitoring for pH, Total Suspended Solids (TSS), and Chemical Oxygen Demand (COD) (Part 4.2.1.1.a.): 1/quarter for entire permit coverage; • Indicator Monitoring for Polycyclic Aromatic Hydrocarbons (PAHs) (Part 4.2.1.1.b): 2/year in years 1 and 4 of permit coverage; • Benchmark Monitoring (Part 4.2.2): 1/quarter in years 1 and 4 of permit coverage (additional monitoring may be required if exceedances occur); • Effluent Limitations Monitoring (Part 4.2.3): 1/year for entire permit coverage; • State or Tribal Monitoring (Part 4.2.4): See Part 9 of the permit for frequency; • Impaired Waters Monitoring (Part 4.2.5): 1/year in years 1 and 4 of permit coverage for discharges to impaired waters without an EPA-approved or established total maximum daily load (TMDL)	Within 30 days of receiving your full laboratory results for all monitored discharge points during the reporting period.	Electronically using EPA's electronic DMR tool (Net-DMR)

Permit Section	Applicable Operator	Report/Submittal	Frequency	Due Date(s)	Where to Submit
Part 7.4	**All operators**	Annual Report	1/year	By January 30th	Electronically using the NPDES eReporting Tool (NeT) for MSGP (NeT-MSGP)
Part 7.5	**Operators subject to follow-up monitoring per Part 4.2.3.3**	Exceedance Report for Numeric Effluent Limitations	If applicable	30 days after receiving laboratory results if 30-day follow-up monitoring indicates exceedance	Follow-up monitoring submitted Electronically using EPA's electronic DMR tool (Net-DMR) Exceedance reports submitted directly to the applicable EPA Regional Office listed in Part 7.8 of the permit
Part 7.6	**Any applicable operator**	Additional Reporting (Noncompliance endangering health, reportable quantity spills, etc.)	As necessary	Varies – see Part 7.6	Varies – see Part 7.6

Appendix P - List of Federal CERCLA Sites

Part 1.1.7 of the MSGP has special requirements for discharges to a federal CERCLA site.[1]

If your facility discharges to one of the federal CERCLA sites listed below, you must notify the EPA Regional Office when submitting your NOI and the EPA Regional Office must determine that you are eligible for permit coverage. In determining eligibility for coverage under Part 1.1.7, the EPA Regional Office may evaluate whether you are implementing or plan to implement adequate controls and/or procedures to ensure your discharge will not lead to recontamination of aquatic media at the CERCLA Site, (i.e., your stormwater discharge will not be controlled as necessary such that the receiving water of the United States will meet an applicable water quality standard. If it is determined that your facility discharges to a CERCLA Site listed below after you have obtained coverage under this permit, you must contact your EPA Regional Office and ensure that you have either implemented or will implement adequate controls and/or procedures to ensure that your discharges will not lead to recontamination of aquatic media at the CERCLA Site such that your stormwater discharge will be controlled as necessary such that the receiving water of the United States will meet an applicable water quality standard.

EPA Region 10

The CERCLA Sites and the receiving waters associated with these sites to which the requirements of Part 1.1.7 apply are listed in the table below. The areas where the permit applies are enumerated in Appendix C of the permit. Operators who discharge / intend to discharge into the receiving waters listed below must first contact the EPA Regional Office before submitting an NOI. Contact information is viewable at: https://www.epa.gov/npdes-permits/stormwater-discharges-industrial-activities-region-10.

Similarly, if you have received notice from EPA that the facility to be covered under the MSGP is considered a potential source to a clean up site, you must first contact the Regional EPA office before submitting an NOI.

	Waterbody (HUC code/Watershed)	**Superfund Sites CERCLIS ID Latitude / Longitude Major Contaminants**
ID	St. Joe River; Coeur d'Alene Lake Basin	St. Maries Creosote IDSFN1002095 47.191697 / -116.343000L PAHs, HPAHs
WA	Commencement Bay, Puget Sound	Commencement Bay, Near Shore/Tide Flats WAD980726368 47.155998 / -122.245998 Dioxins, furans, arsenic, copper, lead, zinc, 4-methyl-phenol, Hex-CB, HPAHs, PCBs, PCE, cadmium, mercury, LPAHs
WA	Duwamish Waterway; Elliott Bay; Puget Sound	Harbor Island (Lead) WAD980722839 47.344584 / -122.210792 Lead, arsenic, copper, HPAHs, LPAHs, mercury, PCBs, zinc, TBT

[1] "CERCLA site" means a facility as defined in Section 101(9) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601(9), that is undergoing a remedial investigation and feasibility study, or for which a Record of Decision for remedial action has been issued in accordance with the National Contingency Plan, 40 C.F.R. Part 300

EPA Region 10

The CERCLA Sites and the receiving waters associated with these sites to which the requirements of Part 1.1.7 apply are listed in the table below. The areas where the permit applies are enumerated in Appendix C of the permit. Operators who discharge / intend to discharge into the receiving waters listed below must first contact the EPA Regional Office before submitting an NOI. Contact information is viewable at: https://www.epa.gov/npdes-permits/stormwater-discharges-industrial-activities-region-10.

Similarly, if you have received notice from EPA that the facility to be covered under the MSGP is considered a potential source to a clean up site, you must first contact the Regional EPA office before submitting an NOI.

	Waterbody (HUC code/Watershed)	**Superfund Sites CERCLIS ID Latitude / Longitude Major Contaminants**
WA	Clam Bay; Puget Sound	Old Navy Dump/ Manchester Lab WA8680030931 47.342798 / -122.325298 PCBs, copper, lead, zinc, silver, 2,4-dimethyl-phenol, PCBs
WA	Elliott Bay; Puget Sound	Pacific Sound Resources WAD009248287 47.345639 / -122.215998 LMW PAHs, HMWPAHs, PCBs
WA	Columbia River	Upper Columbia River (T2) WASFN1002171 47.5722 / -118.5846
WA	Puget Sound	Puget Sound Naval Shipyard WA2170023418 47.333298 / -122.384999 PCBs, mercury
WA	Puget Sound	Wycoff / Eagle Harbor WAD009248295 47.371798 / -122.310012 Mercury, LPAHs, HPAHs
WA	Duwamish Waterway; Elliott Bay; Puget Sound	Lower Duwamish Waterway (T2) WA0002329803 47.321608 / -122.194040 PCBs, PAHs, phthalates, inorganics, mercury, semi-VOCs

NPDES FORM 6100-059	EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 **Endangered Species Protection - Criterion C3 Eligibility Form**	OMB No. 2040-0300 Exp. Date: 3/31/2024

Instructions:

In order to be eligible for coverage under Criterion C3, **you must complete the Endangered Species Protection section of the Notice of Intent in the NPDES eReporting Tool (NeT-MSGP)**. Per Part 7.1, you must submit your NOI electronically via NeT-MSGP, unless the EPA Regional Office grants you a waiver from electronic reporting, in which case you may use this paper Criterion C3 form. If using the paper form, you must complete the following form and you must submit it to EPA following the instructions in Section VII **a minimum of 30 days prior to filing your NOI for permit coverage**. After you submit your form, you may be contacted by EPA with additional measures (e.g., additional stormwater controls or modifications to your discharge- related activities) that you must implement in order to ensure your eligibility under Criterion C3.

If after completing this worksheet you cannot make a determination that your discharges and discharge-related activities are not likely to adversely affect ESA listed threatened or endangered species or designated critical habitat, you must submit this completed worksheet to EPA, and you may not file your NOI for permit coverage until you receive a determination from EPA that your discharges and/or discharge-related activities are not likely to adversely affect ESA-protected species and critical habitat.

Note: Much of the information needed for this form can be obtained from your draft SWPPP which will be needed when you file your NOI.

Section I. Operator, Facility, and Site Location Information

1) Operator Information:

a) Operator Name:

b) Point of Contact

Phone: ___ - ___ - ____ Ext. ____

E-mail:

2) Facility Information

a) Facility Name:

b) Check which of the following applies:

☐ I am seeking coverage under the MSGP as a new discharger or as a new source

☐ I am seeking coverage under the MSGP as an existing discharger and my facility has modifications to its discharge characteristics (e.g., changes in discharge flow or area drained, different pollutants) and/or discharge-related activities (e.g., stormwater controls)

Indicate the number of years the facility has been in operation: _____ years

Provide your NPDES ID (i.e., permit tracking number) from your previous MSGP coverage: _____

☐ I am seeking coverage under the MSGP as an existing discharger and there are no modifications to my facility.

Indicate the number of years the facility has been in operation: _____ years

Provide your NPDES ID (i.e., permit tracking number) from your previous MSGP coverage: _____

c) Facility Address:

Address 1 Street/ Location:

Address 2:

City: State: ZIP Code: -

d) Identify the primary industrial sector to be covered under the 2021 MSGP:

SIC Code **or** **Primary Activity Code**

Sector **and** **Subsector**

e) Identify the sectors of any co-located activities to be covered under the 2021 MSGP:

Sector ☐☐☐☐☐☐☐☐☐☐ **and** **Subsector** ☐☐☐☐☐☐☐☐☐☐

Sector ☐☐☐☐☐☐☐☐☐☐ **and** **Subsector** ☐☐☐☐☐☐☐☐☐☐

Sector ☐☐☐☐☐☐☐☐☐☐ **and** **Subsector** ☐☐☐☐☐☐☐☐☐☐

Sector ☐☐☐☐☐☐☐☐☐☐ **and** **Subsector** ☐☐☐☐☐☐☐☐☐☐

Sector ☐☐☐☐☐☐☐☐☐☐ **and** **Subsector** ☐☐☐☐☐☐☐☐☐☐

Sector ☐☐☐☐☐☐☐☐☐☐ **and** **Subsector** ☐☐☐☐☐☐☐☐☐☐

f) Estimated area of industrial activity exposed to stormwater: _____ acres

g) Provide a general description of the industrial activities that are taking place at this facility:

3) Receiving Waters Information

List all the stormwater outfalls from your facility				For each outfall, provide the following receiving water information:	
Discharge Point ID	**Design Capacity (if known)**	**Latitude (decimal degrees)**	**Longitude (decimal degrees)**	**Name of the receiving water that receives stormwater from the discharge point and/or from the MS4 that the discharge point discharges to**	**Type of Waterbody (e.g., lake, pond, river/stream/creek, estuarine/marine water)**
		__ __ . _ _ _ _ ° N	_ _ _ . _ _ _ _ ° W		
		__ __ . _ _ _ _ ° N	_ _ _ . _ _ _ _ ° W		
		__ __ . _ _ _ _ ° N	_ _ _ . _ _ _ _ ° W		
		__ __ . _ _ _ _ ° N	_ _ _ . _ _ _ _ ° W		
		__ __ . _ _ _ _ ° N	_ _ _ . _ _ _ _ ° W		

Section II. Action Area

As required in Step 2 of Section E.4 of Appendix E, you must include a map and a written description of the action area of your facility in Attachment 1 of this appendix.

Section III. Listed Species and Critical Habitat

As required in Step 3 of Section E.4 of Appendix E, attach a copy of the species and critical habitat list(s) from the Service(s) to Attachment 2 of this appendix and use the list(s) to complete the rest of this worksheet. For FWS species, include the full printout from your IPaC query/Official Species List in Attachment 2. You can include the map from your IPaC query in Attachment 1.

Note: For the purposes of this permit, "terrestrial species" would not include animal or plant species that 1) spends any portion of its life cycle in a waterbody or wetland, or 2) if an animal, depends on prey or habitat that occurs in a waterbody or wetland. For example, shorebirds, wading birds, amphibians, and certain reptiles would not be considered terrestrial species under this definition. Please also be aware that some terrestrial animals (e.g., certain insects, amphibians) may have an aquatic egg or larval/juvenile phase.

Review your species list in Attachment 2, choose one of the following three statements, and follow the corresponding instructions:

☐ The species list includes only terrestrial species and/or their designated critical habitat. No aquatic or aquatic- dependent species or their critical habitat are present in the action area. **You may skip to Section IV of this form. You are not required to fill out Section V.**

☐ The species list includes only aquatic and/or aquatic-dependent species and/or their designated critical habitat. No terrestrial species or their critical habitat are present in the action area. **You may skip to Section V of this form and are not required to fill out Section IV.**

☐ The species list includes both terrestrial and aquatic or aquatic-dependent species and/or their designated critical habitat. **You must fill out both Sections IV and V of this form.**

Section IV. Evaluation of Discharge-Related Activities Effects

Note: You are only required to fill out this section if your facility's action area contains terrestrial species and/or their designated critical habitat. If your action area only contains aquatic and/or aquatic-dependent species and/or their designated critical habitat, you can skip directly to Section V.

Most of the potential effects related to coverage under the MSGP are assumed to occur to aquatic and/or aquatic-dependent species. However, in some cases, potential effects to terrestrial species and/or their critical habitat should be considered as well from any discharge-related activities that occur during coverage under the MSGP. Examples of discharge-related activities that could have potential effects on listed terrestrial species or their critical habitat include the storage of materials and land disturbances associated with stormwater management-related activities (e.g., the installation or placement of stormwater control measures).

A. Select the applicable statement(s) below and follow the corresponding instructions:

☐ There are no discharge-related activities that are planned to occur during my coverage under the 2021 MSGP. You can conclude that your discharge-related activities will have no likely adverse effects, and:

- If there are any aquatic or aquatic-dependent species and/or their critical habitat in your action area, you must skip to Section V, Evaluation of Discharge Effects, below.
- If there are no aquatic or aquatic-dependent species, you may skip to Section VI and verify that your activities will have no likely adverse effects. You must submit this form to EPA as specified in Section VII of this form. You may select criterion C on your NOI form and may submit your NOI for permit coverage 30 days after you have submitted this Criterion C Eligibility Form. You must also provide a description of the basis for the criterion you selected on your NOI form, **including the species and critical habitat list(s) in your action area,** as well as any other documentation supporting your eligibility. You must also include this completed Criterion C Eligibility Form in your SWPPP.

☐ There are discharge-related activities planned as part of the proposal. Describe your discharge- related activities in the following box and continue to (b) below.

B. In order to ensure any discharge-related activities will have no likely adverse effects on ESA- listed threatened and endangered species and/or their designated critical habitat, you must certify that all the following are true:

☐ Discharge-related activities will occur:

- on previously cleared/developed areas of the site where maintenance and operation of the facility are currently occurring or where existing conditions of the area(s) in which the discharge-related activities will occur precludes its use by listed species (e.g., work on existing impervious surfaces, work occurring inside buildings, area is not used by species), and
- if discharge-related activities will include the establishment of structures (including, but not limited to, infiltration ponds and other controls) or any related disturbances, these structures and/or disturbances will be sited in areas that will not result in isolation or degradation of nesting, breeding, or foraging habitat or other habitat functions for listed animal species (or their designated critical habitat), and will avoid the destruction of native vegetation (including listed plant species).

☐ If vegetation removal (e.g., brush clearing) or other similar activities will occur, no terrestrial listed species that use these areas for habitat would be expected to be present during vegetation removal and these activities will not occur within critical habitat.

If all the above are true, you can conclude that your discharge-related activities will have no likely adverse effects, and:

- If there are any aquatic or aquatic-dependent species and/or critical habitat in your action area, you must skip to Section V, Evaluation of Discharge Effects, below.
- If there are no aquatic or aquatic-dependent species, you may skip to Section VI and verify that your activities will have no likely adverse effects. You must submit this form to EPA as specified in Section VII of this form. You may select criterion C on your NOI and may submit your NOI for permit coverage 30 days after you have submitted this completed form. You must also provide a description of the basis for the criterion you selected on your NOI form, **including the species and critical habitat list(s)**, and any other documentation supporting your eligibility. You must also include this completed Criterion C Eligibility Form in your SWPPP.
- **If any of the above are not true**, you cannot conclude that your discharge-related activities will have no likely adverse effects. You must complete the rest of this form (if applicable) and must submit the form to EPA for assistance in determining your eligibility for coverage.

Section V. Evaluation of Discharge Effects

Note: You are only required to fill out this section if your facility's action area includes aquatic and/or aquatic-dependent species and/or their critical habitat.

In this section, you will evaluate the likelihood of adverse effects from your facility's discharges. The scope of effects to consider will vary with each facility and species/critical habitat characteristics. The following are examples of discharge affects you should consider:

- *Hydrological Effects.* Stormwater discharges may adversely affect receiving waters by causing changes in water quality parameters such as turbidity, temperature, salinity, or pH. Stormwater discharges may adversely affect the immediate vicinity of the discharge point through streambank erosion and scour. These effects will vary with the amount of stormwater discharged and the volume and condition of the receiving water. Where a stormwater discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely.

- *Toxicity of Pollutants.* Pollutants in stormwater may have toxic effects on listed species and may adversely affect critical habitat. Exceedances of benchmarks, effluent limitation guidelines, or state or tribal water quality requirements may be indicative of potential adverse effects on listed species or critical habitat. However, some listed species may be adversely affected at pollutant concentrations below benchmarks, effluent limitation guidelines, and state or tribal water quality standards due to exposures to multiple stressors at the same time. In addition, stormwater pollutants identified in Part 6.2.3.2 of your SWPPP, but not monitored as benchmarks or effluent limitation guidelines, may also adversely affect listed species and critical habitat.

As these effects are difficult to analyze for listed species, their prey, habitat, and designated critical habitat, this form helps you to analyze your discharges to make a determination of whether your discharges will likely have adverse effects and whether there are any additional controls you can implement to ensure no likely adverse effects.

A. Evaluation of Pollutants and Controls to Avoid Adverse Effects. In this section, you must document **all** of your pollutant sources and pollutants expected to be discharged in stormwater (see Part 8). You must also document the controls you will implement to avoid adverse effects on listed aquatic and aquatic-dependent species and critical habitat. You must include specific details about the expected effectiveness of the controls in avoiding adverse effects to the listed aquatic-and aquatic-dependent species and critical habitat. Attach additional pages if needed.

Potential Pollutant Source	Potential Pollutants	Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat. Include information supporting why the control(s) will ensure no adverse effects, including any data you have about the effectiveness of the control(s) in reducing pollutant concentrations. You may also attach photos of your controls to this form
e.g., ***vehicle and equipment fueling***	***e.g.,*** • ***Oil & grease*** • ***Diesel*** • ***Gasoline*** • ***TSS*** • ***Antifreeze***	***e.g.,*** • ***Fueling operators (including the transfer of fuel from tank trucks) will be conducted on an impervious or contained pad or under cover*** • ***Drip pans will be used where leaks or spills of fuel can occur and where making and breaking hose connections*** • ***Spill kit will be kept on-site in close proximity to potential spill areas*** • ***Any spills will be cleaned-up immediately using dry clean-up methods*** • ***Stormwater runoff will be diverted around fueling areas using diversion dikes and curbing***

Potential Pollutant Source	Potential Pollutants	Controls to Avoid Adverse Effects on Listed Aquatic and Aquatic-Dependent Species and Critical Habitat.

☐ Check if you are not able to make a preliminary determination that any of your pollutants will be controlled to a level necessary to avoid adverse effects on aquatic and/or aquatic-dependent listed species and their designated critical habitat. You must check in Section VI that you are unable to make a determination of no likely adverse effects and must complete the rest of the form. You must submit your completed form to EPA for assistance in determining your eligibility for coverage.

B. Analysis of Effects Based on Past Monitoring Data. Select which of the following applies to your facility:

☐ I have no previous monitoring data for my facility because there are no applicable monitoring requirements for my facility's sector(s).

☐ I have no previous monitoring data for my facility because I am a new discharger or a new source, but I am subject to monitoring under the 2021 MSGP. You must provide information to support a conclusion that your facility's discharges are not expected to result in benchmark or numeric effluent limit exceedances that will adversely affect listed species or their critical habitat:

☐ My facility has not had any exceedances under the 2015 MSGP of any required benchmark(s) or numeric effluent limits. I comply with the applicable monitoring requirements and have not had any exceedances

☐ My facility has had exceedances of one or more benchmark(s) or numeric effluent limits under the 2015 MSGP, but I have addressed them during my coverage under the 2015 MSGP, or in my evaluation of controls to avoid adverse effects in (A) above. Describe all actions (including specific controls) that you will implement to ensure that the pollutants in your discharge(s) will not result in likely adverse effects from future exceedances.

☐ Check if your facility has had exceedances of one or more benchmarks or numeric effluent limits under the 2015 MSGP and you have not been able to address them to avoid adverse effects from future exceedances, or if you are a new discharger or a new source but you are not sure if you can avoid adverse effects from possible exceedances. You must check in Section VI that you are unable to make a determination of no likely adverse effects. You must submit your completed form to EPA for assistance in determining your eligibility for coverage. You may not file your NOI for permit coverage until you are able to make a determination that your discharges will avoid adverse effects on listed species and designated critical habitat.

Section VI. Verification of Preliminary Effects Determination

Based on Steps I – V of this form, you must verify your preliminary determination of effects on listed species and designated critical habitat from your discharges and/or discharge-related activities:

☐ Following the applicable Steps in I – V above, I have provided information supporting a preliminary determination that my discharges and/or discharge-related activities are not likely to adversely affect listed species and designated critical habitats.

☐ Following the applicable Steps in I – V above, I am **not** able to provide information supporting a preliminary determination that my discharges and/or discharge-related activities are not likely to adversely affect listed species and designated critical habitats.

I. Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle, Last Name

Title

Signature: _____ Date:

E-mail:

Section VII. Criterion C Eligibility Form Submission Instructions

Only if the applicable EPA Regional Office has granted you a waiver from electronic reporting, you must submit this completed form to EPA at msgpesa@epa.govm, including any attachments and any additional information that demonstrates how you will avoid or eliminate adverse effects to listed threatened and endangered species or designated critical habitat (e.g., specific controls you will implement to avoid or eliminate adverse effects). **Any missing or incomplete information may result in a delay of your coverage under the permit.**

If you have made a preliminary determination that your discharges and/or discharge-related activities are not likely to adversely affect listed species and critical habitat, this form must be submitted a minimum of 30 days prior to submitting your NOI for permit coverage under criterion C. Please note that during either the 30-day Criterion C Eligibility Form review period prior to your NOI submission, or within 30 days after your NOI submission and before you have been authorized for permit coverage, EPA may advise you that additional information is needed, or that there are additional measures you must implement to avoid likely adverse effects.

If you are unable to make a preliminary determination that your discharges and/or discharge- related activities are not likely to adversely affect listed species and critical habitat, this worksheet must be submitted to EPA, but you may not file your NOI for permit coverage until you have received a determination from EPA that your discharges and/or discharge-related activities are not likely to adversely affect listed species and critical habitat.

Attachment 1

Include a **map and a written description** of the action area of your facility, as required in Step 2 of Section E.4 of Appendix E. You may choose to include the map that is generated from the FWS' on-line mapping tool IPaC (the Information, Planning, and Consultation System) located at http://ecos.fws.gov/ipac/.

The written description of your action area that accompanies your action area map must explain your rationale for the extent of the action area drawn on your map. For example, your action area written description may look something like this:

> *The action area for the (name of your facility)'s stormwater discharges extends downstream from the outfall(s) in (name of receiving waterbody) (# of meters/feet/kilometers/miles). The downstream limit of the action area reflects the approximate distance at which the discharge waters and any pollutants would be expected to cause potential adverse effects to listed species and/or critical habitat because (insert rationale). The action area does/does not extend to the (name of receiving waterbody)'s confluence with (name of confluence waterbody) because (insert rationale).*

Note that your action area written description will be highly site-specific, depending on the expected effects of your facility's discharges and discharge-related activities, receiving waterbody characteristics, etc.

Attachment 2

List or attach the list(s) of species and critical habitat in your action area on this sheet, as required in Step 3 of Section E.4 of Appendix E. You must include a list for applicable listed NMFS and USFWS species and critical habitat. If there are listed species and/or critical habitat for only one Service, you must include a statement confirming there are no listed species and/or critical habitat for the other Service. For USFWS species, include the USFWS Official Species List full printout from your IPaC query (including the consultation code and event code at the top of the FWS printout). *Note: If your Official Species List from the USFWS indicated no species or critical habitat were present in your action area, include the consultation code and event code that can be found at the top of your Official Species List in your NOI basis statement. If an Official Species List was not available on IPaC, list the contact date, the ecological services field office and the name of the Service staff with whom you corresponded to identify the existence of any USFWS species or critical habitat present in your action area.*

Paperwork Reduction Act Notice

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2040-0300). Responses to this collection of information are mandatory (40 CFR 122.26). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to range from 2.5 to 3 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

APPENDIX B

2021 NPDES NOTICE OF INTENT MAR053164, APPENDIX E CRITERIA, TENANT CERTIFICATION TENNANT NOTICE OF INTENT

NPDES FORM 3510-6	EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 NOTICE OF INTENT (NOI) FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY UNDER THE NPDES MULTI-SECTOR GENERAL PERMIT	FORM Approved OMB No. 2040-0004

Permit Information

This form has not yet been certified.

Master Permit Number: MAR050000

NPDES ID: MAR053164

Eligibility Information

State/territory where your facility is discharging: MA

Does your facility discharge to federally recognized Indian Country lands? No

Are you a *"Federal Operator"* as defined in Appendix A (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_a_-_definitions.pdf)? No

Which type of form would you like to submit? Notice of Intent (NOI)

By indicating "Yes" below, I confirm that I understand that the MSGP only authorizes the stormwater discharges in Part 1.1.2 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), during an inspection, etc. If any discharges requiring NPDES permit coverage other than the allowable stormwater and non-stormwater discharges listed in Parts 1.2.1. and 1.2.2. will be discharged, they must be covered under another NPDES permit.

Yes

Are you a new discharger or a new source as defined in Appendix A (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_a_-_definitions.pdf)? No

- **Have stormwater discharges from your facility been covered previously under an NPDES permit?** Yes
  - **If yes, provide your most current NPDES ID (i.e., permit tracking number) if you had coverage under EPA's MSGP or the NPDES permit number if you had coverage under an EPA individual permit:** MAR053164
- **Are you discharging to any waters of the U.S. that are designated by the state or tribal authority under its antidegradation policy as a Tier 3 water (Outstanding National Resource water)? (See Appendix L (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_l_-_list_of_tier_3_tier_2_and_tier_2.5_waters.pdf))**
  No

What is the legal name of the Operator as defined in Appendix A (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_a_-_definitions.pdf)? Cape Cod Gateway Airport

What is the name of your facility or activity as defined in Appendix A (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_a_-_definitions.pdf)?
CAPE COD GATEWAY AIRPORT

Operator Information

Operator Information

Operator Name: Cape Cod Gateway Airport

Operator Mailing Address

Address Line 1: 480 Barnstable Road

Address Line 2:

City: Hyannis

ZIP/Postal Code: 02601

State: MA

County or Similar Division: Barnstable

Operator Point of Contact Information

First Name **Middle Initial** **Last Name:** Katie Servis

Title: Asst. Airport Manager

Phone: 5087752020 **Ext.:**

Email: kservis@flyhya.com

NOI Preparer Information

☑ **This NOI is being prepared by someone other than the certifier.**

First Name **Middle Initial** **Last Name:** Josephine Ibanez

Organization: Horsley Witten Group, Inc.

Phone: 508-833-6600 **Ext.:**

Email: jibanez@horsleywitten.com

Facility Information

Facility Information

Facility Name: CAPE COD GATEWAY AIRPORT

Facility Address

Address Line 1: 480 BARNSTABLE ROAD

Address Line 2:

City: HYANNIS

ZIP/Postal Code: 02601

State: MA

County or Similar Division: Barnstable

Latitude/Longitude for the Facility

Latitude/Longitude: 41.6666°N, 70.2859°W

Latitude/Longitude Data Source: Map

Horizontal Reference Datum: NAD 83

General Facility Information

What is the ownership type of the facility? Municipality

Estimated area of industrial activity at your facility exposed to stormwater (rounded to the nearest quarter acre): 645

Is your facility presently inactive and unstaffed? No

Exception for Inactive and Unstaffed Facilities: The requirement for indicator monitoring, impaired waters monitoring, and/or benchmark monitoring does not apply at a facility that is inactive and unstaffed, as long as there are no industrial materials or activities exposed to stormwater.

If circumstances change during the permit term that affect your qualifications for this exception to monitoring requirements (i.e. industrial materials or activities exposure to stormwater or your facility's active/inactive and staffed/unstaffed status) you must submit a NOI notifying EPA of the change in circumstances.

Sector-Specific Information

Primary Sector: S

Primary Subsector: S1

Primary SIC Code: 4581

If you are a Sector S (Air Transportation) facility, do you anticipate using more than 100,000 gallons of pure glycol in glycol-based deicing fluids and/or 100 tons or more of urea on an average annual basis? No

Discharge Information

By indicating "Yes" below, I confirm that I understand that the MSGP only authorizes the stormwater discharges in Part 1.2.1 and the allowable non-stormwater discharges listed in Part 1.2.2. Any discharges not expressly authorized in this permit cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), during an inspection, etc. If any discharges requiring NPDES permit coverage other than the authorized stormwater and non-stormwater discharges listed in Parts 1.2.1 and 1.2.2 will be discharged, they must be covered under another NPDES permit.

Yes

Federal Effluent Limitation Guidelines

Identify the Effluent Limitation Guideline(s) that apply to your stormwater discharges.

40 CFR Part/Subpart	Eligible Discharges	Affected MSGP Sector	New Source Date	Applicability
Part 449	Existing and new primary airports with1,000 or more annual jet departures that discharge wastewater associated with airfield pavement deicing that contains urea commingled with stormwater	S	06/15/2012	**Does your facility have any discharges subject to this effluent limitation guideline?** No

Are you requesting permit coverage for any stormwater discharges subject to effluent limitation guidelines? No

Other Discharge Information

Does your facility discharge into a Municipal Separate Sewer System (MS4)? No

Receiving Waters Information

List all of the stormwater discharge points from your facility.

Discharge Point 00A: Outfall A

Applicable Sectors

Select the Sectors/Subsector(s) that apply to this discharge point.

	Sector	Subsector	SIC/Activity Code
☑	**S** - AIR TRANSPORTATION FACILITIES	**S1** - Air Transportation Facilities	4581

Latitude/Longitude: 41.6713°N, 70.2847°W

☐ **This discharge point is *Substantially Identical* to an existing discharge point.**

Receiving Water

GNIS Name: n/a

Waterbody Name: Upper Gate Pond

Listed Water ID: n/a

Is this receiving water saltwater or freshwater? Freshwater

Is this receiving water designated by the state or tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water)?

No

Will you have stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit? No

Benchmark Monitoring

Are you subject to benchmark monitoring requirements for a hardness-dependent metal? No

Impaired Waters Monitoring

NOTE: The information automatically populated in this section for determining if the receiving water is listed as impaired on the 303(d) list and in need of a TMDL, the cause(s) of the impairment if the receiving water is impaired on the CWA 303(d) list, if a TMDL has been completed for the receiving waterbody, and the TMDL ID and pollutants for which there is a TMDL may be outdated and inaccurate. It is recommended that you consult with your state's guidance for discharges into impaired waters to determine the correct pollutants and TMDLS and update the causes for the impairment and TMDL information accordingly.

Massachusetts Impaired Waters (IW) information and required monitoring parameters available at:

https://www.mass.gov/lists/integrated-lists-of-waters-related-reports (https://www.mass.gov/lists/integrated-lists-of-waters-related-reports)

https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf (https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf)

Where the Massachusetts monitoring guidance identifies one or more monitoring parameters that are different than the identified pollutant causing the impairment, indicate the monitoring parameter(s) as the pollutant(s) causing the impairment in the table below (select Yes for "Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL?" to display the pollutant table). Where the monitoring guidance indicates No Monitoring Required "NMR" for the pollutant causing the impairment, do not add a Cause of Impairment Group/Pollutant and delete any that were automatically populated in the table.

Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL? No

Has a TMDL been completed for this receiving waterbody? No

Discharge Point 00B: Outfall B

Applicable Sectors

Select the Sectors/Subsector(s) that apply to this discharge point.

	Sector	Subsector	SIC/Activity Code
☑	**S** - AIR TRANSPORTATION FACILITIES	**S1** - Air Transportation Facilities	4581

Latitude/Longitude: 41.6693°N, 70.2837°W

☐ **This discharge point is *Substantially Identical* to an existing discharge point.**

Receiving Water

GNIS Name:
n/a

Waterbody Name:
Upper Gate Pond

Listed Water ID:
n/a

Is this receiving water saltwater or freshwater? Freshwater

Is this receiving water designated by the state or tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water)?

No

Will you have stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit? No

Benchmark Monitoring

Are you subject to benchmark monitoring requirements for a hardness-dependent metal? No

Impaired Waters Monitoring

NOTE: The information automatically populated in this section for determining if the receiving water is listed as impaired on the 303(d) list and in need of a TMDL, the cause(s) of the impairment if the receiving water is impaired on the CWA 303(d) list, if a TMDL has been completed for the receiving waterbody, and the TMDL ID and pollutants for which there is a TMDL may be outdated and inaccurate. It is recommended that you consult with your state's guidance for discharges into impaired waters to determine the correct pollutants and TMDLS and update the causes for the impairment and TMDL information accordingly.

Massachusetts Impaired Waters (IW) information and required monitoring parameters available at:

https://www.mass.gov/lists/integrated-lists-of-waters-related-reports (https://www.mass.gov/lists/integrated-lists-of-waters-related-reports)

https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf (https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf)

Where the Massachusetts monitoring guidance identifies one or more monitoring parameters that are different than the identified pollutant causing the impairment, indicate the monitoring parameter(s) as the pollutant(s) causing the impairment in the table below (select Yes for "Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL?" to display the pollutant table). Where the monitoring guidance indicates No Monitoring Required "NMR" for the pollutant causing the impairment, do not add a Cause of Impairment Group/Pollutant and delete any that were automatically populated in the table.

Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL? No

Has a TMDL been completed for this receiving waterbody? No

Discharge Point 00C: Outfall C

Applicable Sectors

Select the Sectors/Subsector(s) that apply to this discharge point.

	Sector	Subsector	SIC/Activity Code
☑	**S** - AIR TRANSPORTATION FACILITIES	**S1** - Air Transportation Facilities	4581

Latitude/Longitude: 41.6695°N, 70.2834°W

☐ **This discharge point is *Substantially Identical* to an existing discharge point.**

Receiving Water

GNIS Name:
n/a

Waterbody Name:
Upper Gate Pond

Listed Water ID:
n/a

Is this receiving water saltwater or freshwater? Freshwater

Is this receiving water designated by the state or tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water)?

No

Will you have stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit? No

Benchmark Monitoring

Are you subject to benchmark monitoring requirements for a hardness-dependent metal? No

Impaired Waters Monitoring

NOTE: The information automatically populated in this section for determining if the receiving water is listed as impaired on the 303(d) list and in need of a TMDL, the cause(s) of the impairment if the receiving water is impaired on the CWA 303(d) list, if a TMDL has been completed for the receiving waterbody, and the TMDL ID and pollutants for which there is a TMDL may be outdated and inaccurate. It is recommended that you consult with your state's guidance for discharges into impaired waters to determine the correct pollutants and TMDLS and update the causes for the impairment and TMDL information accordingly.

Massachusetts Impaired Waters (IW) information and required monitoring parameters available at:

https://www.mass.gov/lists/integrated-lists-of-waters-related-reports (https://www.mass.gov/lists/integrated-lists-of-waters-related-reports)

https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf (https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf)

Where the Massachusetts monitoring guidance identifies one or more monitoring parameters that are different than the identified pollutant causing the impairment, indicate the monitoring parameter(s) as the pollutant(s) causing the impairment in the table below (select Yes for "Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL?" to display the pollutant table). Where the monitoring guidance indicates No Monitoring Required "NMR" for the pollutant causing the impairment, do not add a Cause of Impairment Group/Pollutant and delete any that were automatically populated in the table.

Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL? No

Has a TMDL been completed for this receiving waterbody? No

Discharge Point 00D: Outfall D

Applicable Sectors

Select the Sectors/Subsector(s) that apply to this discharge point.

	Sector	Subsector	SIC/Activity Code
☑	**S** - AIR TRANSPORTATION FACILITIES	**S1** - Air Transportation Facilities	4581

Latitude/Longitude: 41.6697°N, 70.279°W

☐ **This discharge point is *Substantially Identical* to an existing discharge point.**

Receiving Water

GNIS Name:
n/a

Waterbody Name:
Lewis Pond

Listed Water ID:
n/a

Is this receiving water saltwater or freshwater? Freshwater

Is this receiving water designated by the state or tribal authority under its antidegradation policy as a Tier 2 (or Tier 2.5) water (water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water)?

No

Will you have stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit? No

Benchmark Monitoring

Are you subject to benchmark monitoring requirements for a hardness-dependent metal? No

Impaired Waters Monitoring

NOTE: The information automatically populated in this section for determining if the receiving water is listed as impaired on the 303(d) list and in need of a TMDL, the cause(s) of the impairment if the receiving water is impaired on the CWA 303(d) list, if a TMDL has been completed for the receiving waterbody, and the TMDL ID and pollutants for which there is a TMDL may be outdated and inaccurate. It is recommended that you consult with your state's guidance for discharges into impaired waters to determine the correct pollutants and TMDLS and update the causes for the impairment and TMDL information accordingly.

Massachusetts Impaired Waters (IW) information and required monitoring parameters available at:

https://www.mass.gov/lists/integrated-lists-of-waters-related-reports (https://www.mass.gov/lists/integrated-lists-of-waters-related-reports)

https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf (https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/msgp-2021-part-425-parameters-ma.pdf)

Where the Massachusetts monitoring guidance identifies one or more monitoring parameters that are different than the identified pollutant causing the impairment, indicate the monitoring parameter(s) as the pollutant(s) causing the impairment in the table below (select Yes for "Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL?" to display the pollutant table). Where the monitoring guidance indicates No Monitoring Required "NMR" for the pollutant causing the impairment, do not add a Cause of Impairment Group/Pollutant and delete any that were automatically populated in the table.

Is the receiving water listed as impaired on the 303(d) list and in need of a TMDL? No

Has a TMDL been completed for this receiving waterbody? No

SWPPP Information

Has the SWPPP been prepared in advance of filing this NOI, as required? Yes

SWPPP Contact Information:

First Name Middle Initial Last Name: Katie Servis

Phone: 5087752020 **Ext.:**

Email: katie.servis@town.barnstable.ma.us

SWPPP Availability:

Your current SWPPP or certain information from your SWPPP must be made available through one of the following three options. Select one of the options and provide the required information.

Note: you are not required to post any confidential business information (CBI) or restricted information (as defined in Appendix A (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_a_-_definitions.pdf)) (such information may be redacted), but you must clearly identify those portions of the SWPPP that are being withheld from public access.

☐ **Option 1: Attach a current copy of your SWPPP to this NOI.**

☐ **Option 2: Maintain a Current Copy of your SWPPP on an Internet page (Universal Resource Locator or URL).**

☑ **Option 3: Provide the following information from your SWPPP:**

A. Describe your onsite industrial activities exposed to stormwater and potential spill and leak areas.

e.g., material storage; equipment fueling, maintenance, and cleaning; cutting steel beams

Industrial activities exposed to stormwater include:- vehicle and aircraft operation, storage, and maintenance, fuel storage and transfer between on-site storage facilities, fuel delivery vehicles, mobile refuelers, aircraft, and ground support vehicles- deicing and washing of aircraft at designated deicing locations where residual deicing fluid and washwater is collected and discharged to a wastewater treatment facility- winter maintenance of pavement utilizing Federal Aviation Administration (FAA) approved sand

B. List the pollutants(s) or pollutant constituent(s) associated with each industrial activity exposed to stormwater that could be discharged in stormwater and/or in any authorized non-stormwater discharges listed in Part 1.1.3.

Vehicle and aircraft operation, storage, and maintenance - oil and grease, gasoline, aviation fuels, antifreeze, waste oilAircraft deicing and washing - propylene glycol, oil and grease, aviation fuel residuals, antifreeze, metalsWinter maintenance of pavement - suspended solids

C. Describe the control measures you will employ to comply with the non-numeric technology-based effluent limits required in Part 2.1.2 and Part 8, and any other measures taken to comply with the requirements in Part 2.2 Water Quality-Based Effluent Limitations (see Part 5.2.4).

Minimize exposure - storage of fuel, oil, and maintenance products, and waste products, is prohibited in areas exposed to stormwater. Deicing and aircraft washing is only allowed in designated areas where residual deicing fluid and washwater are collected and discharge to a wastewater treatment facility. Spill kits and containment measures are stationed at fuel transfer locations, and all fuel deliveries to the Airport fuel farm are monitored by Airport personnel. 100% of stormwater discharged to Upper Gate and Lewis Ponds is treated by a Vortechs hydronamic separator achieving greater than 80% total suspended solids removal prior to discharge. The Airport has implemented a Spill Prevention Control and Countermeasure (SPCC) Plan, and a Zero Discharge Policy that prohibits any discharge of vehicle or aircraft washwater to areas exposed to stormwater or areas that discharge to the facility stormwater system.

D. Provide a schedule for good housekeeping and maintenance (see Part 5.2.5.1) and a schedule for all inspections required in Part 4 (see Part 5.2.5.2).

Mobile refuelers and fuel storage facilities are inspected by the operator on a daily basis for any deficiencies and are removed from service if any deficiencies are observed. Good housekeeping measures are intended to be consistently implemented by the Airport and tenant operators on a daily basis. Discharge monitoring will be conducted by Airport personnel on a quarterly basis, and monthly during the deicing season (variable, typically November through March). Routine facility inspections will be conducted by Airport personnel on a quarterly basis, or more frequently to address any areas of significant activity (i.e., during airfield construction projects). At least one routine facility inspection per year will be conducted during a period when stormwater discharge is occuring. Maintenance of stormwater structures (i.e., sediment and debris removal) is conducted during the spring, and on a more frequent basis as necessary based on visual inspection of the stormwater structures.

Endangered Species Protection Worksheet: Criterion C1

The following questions will help you determine your eligibility under Part 1.1.4 of the permit with respect to protection of Endangered Species Act (ESA) species and critical habitat(s). Please refer to Appendix E (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_e_-_procedures_relating_to_endangered_species_protection.pdf) of the 2021 MSGP for important information regarding your obligations under this permit concerning ESA-protected species and critical habitat(s).

Determine ESA Eligibility Criterion

Are your industrial activities already addressed in another operator's valid certification of eligibility for your "action area" under eligibility criteria A, C, D, or E of the 2021 MSGP? No

Are your industrial activities the subject of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of your facility's discharges and discharge-related activities on ESA-listed species and critical habitat?

No

You must determine whether species listed as either threatened or endangered under the Endangered Species Act, and/or their critical habitat are located in your facility's action area. ESA-listed species and critical habitat are under the purview of the NMFS and the USFWS.

Determine Your Action Area

Your "action area" (as defined in Appendix A (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_a_-_definitions.pdf)) includes all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action, including areas beyond the footprint of the facility that are likely to be affected by stormwater discharges, discharge-related activities, and authorized non-stormwater discharges. You must select and confirm that all the following are true:

- **In determining my "action area", I have considered that discharges of pollutants into downstream areas can expand the action area well beyond the footprint of my facility and the discharge point(s). I have taken into account the controls I will be implementing to minimize pollutants and the receiving waterbody characteristics (e.g. perennial, intermittent, ephemeral) in determining the extent of physical, chemical, and/or biotic effects of the discharges. I confirm that all receiving waterbodies that could receive pollutants from my facility are included in my action area.**

  True

- **In determining my "action area", I have considered that discharge-related activities must also be accounted for in determining my action area. I understand that discharge-related activities are any activities that cause, contribute to, or result in stormwater and authorized non-stormwater point source discharges, and measures such as the siting, construction, and operation of stormwater controls to control, reduce, or prevent pollutants from being discharged. I understand that any new or modified stormwater controls that will have noise or other similar effects, and any disturbances associated with construction of controls, are part of my action area.**

  True

Provide a written description of your action area and explain your rationale for the extent of the action area drawn on your map. Click here for an example.

The action area for the Cape Cod Gateway Airport's stormwater discharges extends from the facility to the discharge points located at Lewis Pond and Upper Gate Pond. The limit of the action area reflects the approximate distance at which the discharge and any pollutants would be expected to cause potential adverse effects to ESA-listed species and/or critical habitat because Lewis Pond and Upper Gate Pond are the only receiving waterbodies. The action area does not extend beyond these ponds, since there are no other direct hydrologic connections.

Attach a map of the action area for your facility. Mapping tool IPaC (the Information, Planning, and Consultation System) located at http://ecos.fws.gov/ipac/ (https://ecos.fws.gov/ipac/) or click here (/net-msgp/documents/action_area_example.pdf) for an example.

Name	Uploaded Date	Size
2021_Drainage Plan Layout.pdf (attachment/715527)	05/26/2021	4.10 MB

Determine if ESA-listed species and/or critical habitat are in your facility's action area.

ESA-listed species and critical habitat are under the purview of the NMFS and the USFWS, and in many cases, you will need to acquire species and critical habitat lists from both federal agencies.

National Marine Fisheries Service (NMFS)

To obtain NMFS-listed species and critical habitat information, use the resources listed below:

General Resources:
- NOAA Fisheries, Regions Page (https://www.fisheries.noaa.gov/regions)

For the Northeastern U.S.:
- NOAA Fisheries Greater Atlantic Region ESA Section 7 Mapper (https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27)

For Puerto Rico:
- *Acropora* critical habitat map (https://www.fisheries.noaa.gov/resource/map/acropora-elkhorn-and-staghorn-coral-critical-habitat-map-and-gis-data)
- Green turtle critical habitat map (https://www.fisheries.noaa.gov/resource/map/green-turtle-critical-habitat-map-and-gis-data)
- Hawksbill Turtle critical habitat map (https://www.fisheries.noaa.gov/resource/map/hawksbill-turtle-critical-habitat-map-and-gis-data)

Western U.S.:
- West Coast Region Protected Resources App (https://www.webapps.nwfsc.noaa.gov/portal/apps/webappviewer/index.html?id=7514c715b8594944a6e468dd25aaacc9)

Pacific Islands:
- Contact the Pacific Islands Regional Office at (808) 725-5000 or pirohonolulu@noaa.gov (mailto:pirohonolulu@noaa.gov)

I have checked the webpages listed above and confirmed that: There are no NMFS-listed species and/or critical habitat in my action area.

U.S. Fish and Wildlife Service (USFWS)

To obtain FWS-listed species and critical habitat information, use the resources listed below:
- IPaC (the Information, Planning, and Consultation System) (https://ecos.fws.gov/ipac/)
- For instructions for using IPaC, click here.

I have checked the webpages listed above and confirmed that: There are FWS-listed species and/or critical habitat in my action area.

For FWS species, include the full printout from your IPaC query/Official Species List.

Name	Uploaded Date	Size
Species List_ New England Ecological Services Field Office.pdf (attachment/715517)	05/26/2021	194.57 KB

You may be eligible under **Criterion C.** You must assess whether your discharges and discharge-related activities are likely to adversely affect ESA-listed species or critical habitat, and whether any additional measures are necessary to ensure no likely adverse effects. In order to make a determination of your facility's likelihood of adverse effects, you must complete the Criterion C Eligibility fields below.

Criterion C Eligibility

Select which applies:

Criterion C1: Facility eligible for Criterion C in the 2015 MSGP with no change to ESA-listed species, critical habitat, or action area.
Your facility was eligible for Criterion C in the 2015 MSGP and there has been no change in your facility's action area and you have confirmed that there are no additional ESA-listed species or critical habitat under the jurisdiction of USFWS and/or NMFS in your action area since your certification under Criterion C in the 2015 MSGP. You must provide a description of the basis of this criterion selected on your NOI form and provide documentation supporting your eligibility determination in your SWPPP.

Select which applies:

I am seeking coverage under the MSGP as an existing discharger and my facility has modifications to its discharge characteristics (e.g., changes in discharge flow or area drained, different pollutants) and/or discharge-related activities (e.g., stormwater controls).

Provide a basis statement providing the USFWS and/or NMFS resources consulted that helped you determine that there are no additional ESA-listed species and/or critical habitat have been listed by under the jurisdiction of the Services in your action area.

Based on a review of information provided by the National Marine Fisheries Service (NMFS) and using the NOAA Fisheries Greater Atlantic Region ESA Section 7 Mapper, there are no listed threatened or endangered species or critical habitat in the designated action area. Based on a listed threatened and endangered species and critical habitat information request completed in the U.S. Fish and Wildlife Information, Planning, and Coordination (IPaC) system, there is one threatened species and one endangered species listed and no critical habitat designated for the action area. The Northern Long-eared Bat is listed as threatened and the American Chaffseed is listed as endangered. Slight drainage modifications were made to areas near the East Ramp of the Airport. All drainage changes made in 2021 did not result in any additional stormwater directed towards Lewis Pond or Upper Gate Pond.

Note: Any missing or incomplete information in this section may result in a delay of your coverage under the permit.

Historic Preservation: Criterion A

The following questions will help you determine your eligibility under Part 1.1.5 of the permit with respect to preservation of historic properties. You may still use the paper instructions in Appendix F (https://www.epa.gov/sites/production/files/2021-01/documents/2021_msgp_-_appendix_f_-_procedures_relating_to_historic_properties_preservation.pdf) of the MSGP in advance or in conjunction with answering the questions in this section of the form. For more information about your State Historic Preservation Office (SHPO) or Tribal Historic Preservation Office (THPO), please visit the National Park Service (NPS) websites at:

- **State Historic Preservation Office (SHPO) (https://www.nps.gov/subjects/nationalregister/state-historic-preservation-offices.htm)**
- **Tribal Historic Preservation Office (THPO) (https://www.nps.gov/history/tribes/Tribal_Historic_Preservation_Officers_Program.htm)**

Are you an existing facility that is resubmitting for certification under the 2021 MSGP? Yes

➜ **If you are an existing facility you should have already addressed National Historic Preservation Act (NHPA) issues. To gain coverage under the 2015 MSGP, you were required to certify that you were either not affecting historic properties or had obtained written agreement from the relevant SHPO or THPO regarding methods of mitigating potential impacts.**

Will you be constructing or installing any new stormwater control measures? No

You are eligible under **Criterion A**.

Certification Information

Form has not been certified yet.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: May 26, 2021
Consultation Code: 05E1NE00-2021-SLI-3555
Event Code: 05E1NE00-2021-E-10665
Project Name: Cape Cod Gateway Airport

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-3555
Event Code: 05E1NE00-2021-E-10665
Project Name: Cape Cod Gateway Airport
Project Type: TRANSPORTATION
Project Description: Environmental Overview
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.670652863991194,-70.28344048034839,14z

Counties: Barnstable County, Massachusetts

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Flowering Plants

NAME	STATUS
American Chaffseed *Schwalbea americana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1286	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX C

RECORD OF CHANGES

STORMWATER POLLUTION PREVENTION PLAN
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS
RECORD OF CHANGES

This Stormwater Pollution Prevention Plan has been prepared for the Cape Cod Gateway Airport. No alteration or revision shall be made to any part of this plan except at the direction of the Airport Manager. The Airport Manager shall update this plan as required, and shall ensure the timely update of all facility plans.

Date	Revision Number	Author of Revision	Approved By
11/1999	1	Edwards and Kelcey	John McDonald
3/2002	2	Edwards and Kelcey	Frank Sanchez
11/2003	3	Edwards and Kelcey	Quincy Mosby
12/2009	4	Horsley Witten Group	Roland Breault
7/2013	5	Horsley Witten Group	Roland Breault
9/2015	6	Horsley Witten Group	Katie Servis
12/2015	7	Horsley Witten Group	Katie Servis
04/2020	8	Horsley Witten Group	Katie Servis
05/2021	9	Horsley Witten Group	Katie Servis

APPENDIX D

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Sandwich, MA • 02563
Phone - 508-833-6600 • Fax - 508-833-3150 • *www.horsleywitten.com*

Spill Prevention, Control, and Countermeasure Plan

Barnstable Municipal Airport
Hyannis, Massachusetts

Revision 4, April 2020

Barnstable AIRPORT HYANNIS

Prepared for:

Barnstable Municipal Airport
480 Barnstable Road
Hyannis, Massachusetts 02601

Job # 14105

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS
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PREFACE - I

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
EMERGENCY ACTION PLAN

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

This Emergency Response Action Plan has been developed for the Barnstable Municipal Airport, 480 Barnstable Road, Hyannis, Massachusetts 02601 as a guide to assist in the response to releases of oil and/or hazardous materials to the environment.

1.0 EMERGENCY NOTIFICATION PHONE LIST

National Response Center (to report a release to navigable waters)
24-Hour Call Center: 800-424-8802

Massachusetts Department of Environmental Protection Emergency Response Center
24-Hour Call Center: 888-304-1133

Massachusetts State Police / Hyannis Fire Department
24-Hour Call Center: 911

Airport Rescue and Fire Fighting
24-Hour Call Center: 508-778-7770

Barnstable Fire District Water Department
(To report a spill on Water Dept. property located north of 15/33)
Office: 508-362-6498
Supt. Thomas Rooney (24-Hour): 508-364-9359

The Barnstable Municipal Airport Emergency Response Personnel include the following:

Spill Response Program Manager:

Katie Servis
Airport Manager
Barnstable Municipal Airport
508-775-2020

PREFACE – I

(continued)

Spill Response Coordinator:

Robert Holzman
Operations Supervisor
Barnstable Municipal Airport
508-778-7770 (24-hour contact number)

Local consultants and contractors to contact for spill response:

Licensed Site Professional:

Horsley Witten Group, Inc.
90 Route 6A
Sandwich, Massachusetts
508-833-6600

Bryan Massa, LSP
24-Hour Contact Number: 781-243-1527

Mark Nelson, LSP
24-Hour Contact Number: 508-566-0912

Spill Response Contractors:

Clean Harbors	800-645-8256
Moran Environmental Recovery	888-233-5338
Global Remediation	508-828-1005

Spill Response Materials/Equipment

A rapid spill response trailer is maintained at the Airport ARFF/SRE Building; a complete inventory of the trailer's contents is included as Appendix F in the SPCCP. Inventories are conducted regularly, and out-of-date equipment is replaced. A smaller spill kit is also maintained on each of the Airport's Mobile Refuelers, at the Gate F Fuel Farm, and at the Airport ARFF/SRE Building waste oil and anti-freeze storage AST. Each tenant involved in the storage or transfer of fuel is responsible for maintaining their own spill response resources on each of their vehicles and at fuel storage locations.

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(continued)

2.0 IMMEDIATE ACTIONS

Spill response actions may include the following (as personnel safety allows)

1) Initiate evacuation, if necessary.
2) Notify Federal and State Emergency Response Personnel (see Section 1.0).
3) Stop spill flow when possible without risk of personal injury.
4) Contain the spill using whatever means readily available.
5) Make the spill location off limits to unauthorized personnel.
6) Restrict all sources of ignition when flammable substances are involved.
7) Report the release to the appropriate regulatory agencies (MassDEP, Fire Department, Airport Operations).

PREFACE – I

(continued)

3.0 RELEASE NOTIFICATION FORM

A. Incident Description

Date:_____ Reporter:_____
Time of Incident:_____ Time of Report:_____
Facility Name:_____
Facility Telephone #:_____
Location of Release:_____
Facility Location:_____
Street Address:_____
City/Town:_____

B. Release Description

Type of material(s) released:_____
Estimated quantity released:_____
Were there injuries to anyone on site?:_____
Did the release impact a catch basin or storm drain?:_____
Describe the ground surface that the release occurred over:_____
_____
Did the release enter or travel along underground utilities (pipes, conduit, etc.)?:
_____
How did the release occur?_____
_____
Other details:_____
_____

Are any surface waters impacted, or in danger of being impacted?
_____
_____

C. Spill Response Program Notification Requirements

IN THE EVENT OF ANY RELEASE, NOTIFY:

PROGRAM MANAGER KATIE SERVIS 508-775-2020

SPILL RESPONSE COORDINATOR ROBERT HOLZMAN 508-778-7770

BARNSTABLE MUNICIPAL AIRPORT RESCUE AND FIREFIGHTING 508-778-7770

PREFACE – I

(continued)

IF RELEASE IS LOCATED ON WATER DEPT. PROPERTY NORTH OF 15/33, NOTIFY:

SUPT. THOMAS ROONEY 508-364-9359

D. State and Federal Notification Requirements

Does Massachusetts Department of Environmental Protection (MassDEP) Require Notification?

- **A release of ≥ 10 Gallons Gas/Diesel/Oil requires MassDEP Notification**
- **A release of an unknown quantity requires MassDEP notification**

If required, notify Massachusetts DEP at 888-304-1133*

Does the USCG/Federal National Response Center (NRC) Require Notification?

- **A discharge to navigable waters requires USCG/NRC notification**
- **A sheen on water surface is considered a harmful quantity**

If required, notify USCG/NRC at 800-424-8802*

* **record any instructions/information from MassDEP or NRC in the space provided below.**

E. Generator Information

Generator/Responsible Party: _____
Street Address: _____
City/Town: _____State:_____
Contact Person: _____Title: _____
Contact Telephone Number: _____

F. Documentation of Notification
(Record time of agency/contact notification, instructions, reporting number, etc. here)

_____
_____
_____
_____
_____
_____

PREFACE – I

(continued)

4.0 REPORTABLE CONDITIONS

In accordance with Commonwealth of Massachusetts regulations, 310 CMR 30 and 310 CMR 40.0000, a release or threat of a release of a reportable quantity of oil and or hazardous materials must be reported to the MassDEP within two hours of obtaining knowledge of the release. Under MassDEP regulations 310 CMR 40.0000 a release of oil of **10-gallons or greater** is considered reportable. Contaminants detected in the environment at or above a certain concentration require reporting to the MassDEP, are listed in 310 CMR 40.1600. Refer to Appendix E of the Airport's SPCCP for forms to be completed during a spill event.

Federal reportable quantities for releases into soil, water and air are listed in Table 302.4 of 40 CFR 302.4. Each regulatory agency has these reportable quantities posted on its website (www.state.gov/dep; and www.epa.gov).

PREFACE - II

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN APPROVAL AND CERTIFICATION

BARNSTABLE MUNICIPAL AIRPORT HYANNIS, MASSACHUSETTS

MANAGEMENT APPROVAL

This oil and hazardous substances Spill Prevention, Control, and Countermeasure Plan and attached Emergency Response Action Plan has been carefully reviewed by Barnstable Municipal Airport Management. Management concurs with and supports the programs and procedures which are to be implemented, periodically reviewed, and updated in accordance with Federal Regulation 40 CFR 112.

Signature: _____

Katie Servis
Spill Response Program Manager
Airport Manager
Barnstable Municipal Airport

PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I am familiar with the provisions of Federal Regulation 40 CFR 112 and attest that the Spill Prevention, Control, and Countermeasure Plan has been prepared in accordance with reasonable and prudent engineering practices, and satisfies the current requirements of the aforementioned regulation.

Name: Richard A. Claytor, Jr., P.E.

Signature: _____

Date: 4-29-2020

Registration Number: 45116

x

PREFACE - III

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
RECORD OF CHANGES

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

This Spill Prevention, Control, and Countermeasure Plan has been prepared for the Barnstable Municipal Airport. No alteration or revision shall be made to any part of this plan except at the direction of the Spill Response Program Manager. The Program Manager shall update this plan as required, and shall ensure the timely update of all facility plans.

Date	Revision Number	Section and Pages Changed	Author of Revision	Approved By
10/06	1	Plan Update	Horsley Witten Group, Inc.	FS
7/10	2	Tenant List Update	Horsley Witten Group, Inc.	FS
12/13	3	Plan Update	Horsley Witten Group, Inc.	FS
04/20	4	Plan Update	Horsley Witten Group, Inc.	KS

PREFACE - IV

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN
REGULATORY CROSS-REFERENCE WITH 40 CFR 112

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

Regulatory Provision	Regulatory Requirement	Location in SPCCP
112.3 (d)	Professional Engineer Certification	Preface II
112.3 (e)	Location of SPCC Plan	Section 2.0
112.5	SPCC Plan review and amendment	Section 3.0
112.7	Facility Management approval	Preface II
112.7	Cross reference with 40 CFR 112	Preface IV
112.7 (a)(1)	Discussion of Facility conformance	Section 1.0
112.7 (a)(2)	Deviation from plan requirements	Not Applicable
112.7 (a)(3)	Facility physical layout and facility	Section 7.0,
112.7 (a)(3)(i)	Oil storage containers	Sections 8.0, 9.0 Figures 2 and 3
112.7 (a)(3)(ii)	Discharge prevention measures	Section 10.0
112.7 (a)(3)(iii)	Discharge or drainage controls	Section 10.0
112.7 (a)(3)(iv)	Countermeasures for discharge discovery, response, and cleanup	Section 12.0, 14.0
112.7 (a)(3)(v)	Methods of disposal of recovered	Section 12.1.1
112.7 (a)(3)(vi)	Emergency contact list	Section 13.1,
112.7 (a)(4)	Discharge reporting	Section 13.0,
112.7 (a)(5)	Discharge response procedures	Section 12.0
112.7 (b)	Potential discharge volumes and direction	Section 8.0, 9.0,
112.7 (c)	Containment and diversionary structures	Section 8.0, 9.0,
112.7 (d)	Demonstration of impracticability of secondary	Not Applicable
112.7 (e)	Inspections, Tests, and Records	Section 15.0

PREFACE – IV

(continued)

Regulatory Provision	Regulatory Requirement	Location in SPCCP
112.7 (f)(1)	Oil handling personnel trained in operation and maintenance of facility equipment to avoid a discharge, discharge procedures, applicable laws and regulations, and contents of SPCC Plan	Section 4.0
112.7 (f)(2)	Designate personnel at each applicable facility responsible for SPCC Plan compliance	Section 2.0
112.7 (f)(3)	Discharge prevention briefings for all oil-handling personnel	Section 4.0
112.7 (g)(1)	Applicable areas fully fenced when unattended	Section 7.3
112.7 (g)(2)	Flow and drain valves secured in closed position when not in operation	Appendix B
112.7 (g)(3)	Transfer controls secured in closed position when not in operation, accessible only by authorized personnel	Appendix B
112.7 (g)(4)	Transfer systems capped when not in operation	Appendix B
112.7 (g)(5)	Adequate facility lighting to observe a discharge and prevent vandalism	Section 7.3
112.7 (h)(1)	Quick drainage systems in lieu of catchment basin	Not Applicable
112.7 (h)(2)	Warning system to prevent vehicle departure prior to complete disconnection of flexible or fixed transfer lines	Appendix B
112.7 (h)(3)	Inspection of all transfer connections on vehicle prior to transfer	Appendix B
112.7 (i)	Brittle fracture evaluation	Section 15.5
112.7 (j)	Compliance with Applicable State and Local Requirements	Section 1.0
112.8 (b)	Facility drainage	Section 7.5
112.8 (c)(1)	Bulk storage container construction	Section 8.0, 9.0

PREFACE – IV

(continued)

Regulatory Provision	Regulatory Requirement	Location in SPCCP
112.8 (c)(2)	Secondary containment	Section 8.0, 9.0, 10.0
112.8 (c)(3)	Drainage of diked areas	Section 7.5
112.8 (c)(4)	Corrosion protection	Section 8.0
112.8 (c)(5)	Partially buried and bunkered storage tanks	Not Applicable
112.8 (c)(6)	Inspection and testing of aboveground storage tanks	Section 15.0
112.8 (c)(7)	Heating coils	Not Applicable
112.8 (c)(8)	Overfill prevention devices	Section 8.0
112.8 (c)(9)	Effluent treatment facilities	Not Applicable
112.8 (c)(10)	Visible discharges	Appendix B
112.8 (c)(11)	Mobile and portable containers	Section 8.0, 9.0
112.8 (d)	Transfer operations, pumping and in-plant	Section 8.0
112.20 (e)	Certification of Substantial Harm Determination	Appendix A

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN

BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

1.0 INTRODUCTION

Code of Federal Regulations 40, Subpart 112 (40 CFR 112) provides guidance for the development of Spill Prevention, Control, and Countermeasure Plans (SPCCP) and establishes procedures and methods to prevent the discharge of oil from non-transportation-related facilities into surface waters and adjoining shorelines. Additionally, Massachusetts State regulations (310 CMR 30.521(4)) require SPCCPs, with added requirements to comply with State 310 CMR 30 Hazardous Waste regulations. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Regulation 40 CFR 300.3, and the Resource Conservation and Recovery Act (RCRA) Regulation 40 CFR 264.52 expand the scope of the SPCCP to incorporate hazardous materials as defined in 40 CFR 302.3.

An SPCCP must be written and certified for an installation or commercial entity when both of the following criteria are met:

1. There is a reasonable potential for discharging oil into or upon navigable waters of the United States; and
2. The oil storage capacity on-site exceeds either:
    a. 42,000-gallons of total underground storage, or
    b. 1,320-gallons of total above-ground storage, or any single container having a capacity in excess of 660-gallons.

This SPCCP has been prepared for the Barnstable Municipal Airport, 480 Barnstable Road, Hyannis, Massachusetts 02601 (the "Airport"), due to the following:

1. There is a reasonable potential for discharging oil into or upon the waters of the United States, and
2. Above-ground fuel storage capacity exceeds 1,320-gallons, with a single container having a capacity in excess of 660-gallons.

2.0 SPCCP IMPLEMENTATION

This SPCCP is to be implemented by Airport employees and tenants. The Spill Response Program Manager (Program Manager) and Spill Response Coordinator (Coordinator) are

responsible, to the greatest extent possible, for ensuring employee and tenant awareness, program participation, and operational compliance with the guidelines provided in this SPCCP. Copies of the SPCCP are to be maintained in the Barnstable Municipal Airport (Airport) Management Office within the Main Terminal, the Aircraft Rescue and Fire Fighting/Snow Removal Equipment (ARFF/SRE) Building, and with the tenants identified in Section 7.2.

Spill Response Program Manager:
Katie Servis
Airport Manager
Barnstable Municipal Airport
508-775-2020

Spill Response Coordinator:
Robert Holzman
Operations Supervisor
508-778-7770 (24-hour contact number)

Effective spill prevention and response management is best facilitated through the designation of a Response Team representative (typically an owner, manager, or supervisor) for each Airport tenant operation involving the storage, transfer, or use of oil and/or hazardous materials (OHM). Response Team representatives are responsible for personnel training and maintaining operational compliance with the guidelines established in this SPCCP and described in further detail in Section 4.0 of this plan.

3.0 SPCCP REVIEW

If there is a change in the facility design, construction, operation, or maintenance which materially affects the potential for discharge of OHM into surface waters and adjoining shorelines, this SPCCP shall be amended in accordance with 40 CFR, parts 112.5 and 112.7. Amendments shall be implemented no later than 6 months after such changes occur. The Program Manager shall review and evaluate the SPCCP every five years. The Program Manager shall amend the SPCCP within 6 months of the five-year review to include more effective prevention and control technology, if available. No amendment to this SPCCP shall be effective to satisfy these requirements unless it has been certified by a Professional Engineer in accordance with 40 CFR 112.3(d). Statements of Airport Management Approval and Professional Engineer Certification, and a SPCCP Revision Log are included as prefaces to this plan. Amendments which do not significantly alter the potential for a discharge to occur, such as name and address revisions, do not require an Engineer's certification, however, all revisions shall be recorded in the SPCCP Revision Log.

4.0 RESPONSE TEAM DESIGNATION AND PERSONNEL TRAINING

The Coordinator shall designate a Response Team representative for each Airport tenant operation that involves the transport, use, or storage of OHM. Response Team members, along with the Coordinator, will be responsible for ensuring spill awareness among Airport and tenant employees, and operational compliance with the provisions of this SPCCP.

At a minimum, OHM-handling personnel shall be trained in the operation and maintenance of related facility equipment, facility discharge procedures, applicable laws and regulations, and the contents of the SPCCP. On an annual basis, the Coordinator shall conduct Discharge Prevention briefings for all oil-handling personnel, and include discussions of the SPCCP, any discharges within the past year, or changes to the Airport that might affect the potential for a discharge.

No provisions within this SPCCP, expressed or understood, relieve any tenant from providing response training to their employees, as required by Local, State and Federal regulations. Each Response Team Member shall provide the Coordinator with 24-hour contact information for inclusion in Section 7.2, and in the Airport's Emergency Response Action Plan (ERAP), described in Section 11.0.

5.0 SPCCP LIMITATIONS

This SPCCP provides information critical to the prevention of, and response to, releases of OHM at the Airport, and includes discussions of tenant operations, storage facilities, and transfer procedures. The Airport assumes no liability or responsibility for tenant operational compliance with applicable Local, State, and Federal Regulations, including the requirements established in 40 CFR 112, and described in this SPCCP. Tenants required to prepare and implement a SPCCP shall do so independently of this SPCCP.

6.0 APPLICATION OF SUBSTANTIAL HARM CRITERIA

Appendix C of 40 CFR 112 requires a facility to determine whether or not their facility is considered a "substantial harm facility." Certification of the applicability of the substantial harm criteria for the Airport is included as Appendix A. Substantial harm facilities are required to submit a Facility Response Plan to the Environmental Protection Agency's (EPA) Regional Administrator. The Airport is not considered a "substantial harm" facility and as such is not required to submit a Facility Response Plan to the EPA Regional Administrator.

7.0 FACILITY INFORMATION

7.1 Facility Description and Operations

The Airport provides commercial airline service and general aviation services to Boston, Cape Cod and the Islands of Martha's Vineyard, and Nantucket. The Airport began operations in 1928 and is the third largest and busiest airport in the Commonwealth of Massachusetts.

The Airport property consists of approximately 645 acres, approximately 142 are paved for use as taxiways, runways, and parking aprons. The Airport is bordered to the south by Barnstable Road (Route 132), to the west by Yarmouth Road, to the north by Route 6, and to the east by an industrial park (Independence Park). A locus map is included as Figure 1 and an aerial photograph identifying OHM storage locations at the Airport is included as Figure 2. Structures on Airport property include the Main Terminal and Air Traffic Control Tower (ATCT), several service and storage hangars, tenant facilities, and the Airport Rescue and Fire Fighting/Snow Removal Equipment Building (Airport ARFF/SRE). Airport property and structures located along runways 6 and 15 are commonly referred to as the East and North Ramps, respectively. A site plan detailing the structural layout of the Airport including stormwater drainage patterns and locations is included as Figure 3.

More than 40 tenant businesses operate on Airport property, providing industry-related services. Normal tenant operations include the maintenance and servicing of aircraft and associated aviation equipment, aviation fuel transfer, and general facility maintenance. Operations related to aircraft maintenance include engine maintenance, electronics repair, hydraulic system repair, aircraft washing, body repair, aircraft de-icing, and wheel and tire maintenance and repair. Ground vehicle operations and maintenance includes fluid changes, filter changes, refueling, brake repair, interior and exterior reupholstering, body repair, minor painting, and washing.

Airport Operations and Maintenance responsibilities include fuel transfer, traffic control, airport security, equipment operation and maintenance, facility maintenance and grounds-keeping. OHM use and storage at the Airport includes aviation fuel, gasoline, diesel, lubrication oil, motor oil, waste oil, deicing solutions, anti-freeze, paints, industrial chemicals and adhesives, compressed gases, solvents, and cleaning solutions.

Facilities maintenance operations include structural maintenance and repairs, airfield lighting and marking maintenance, painting, mowing, snow removal, and utility maintenance.

7.2 Tenant and Airport Operations Information

Current Airport Operations and tenant contact information are presented below.

Robert Holzman
Airport Operations Supervisor
480 Barnstable Road - 2nd Floor
Hyannis, MA 02601
508-778-7770

Helyne Medeiros
Rectrix Aerodrome Center, Inc.
Box 13 - 730 Barnstable Road
Hyannis, MA 02601
508-771-7520

Hildie Rios
Aviation Fuel Coordinator
480 Barnstable Road
Hyannis, MA 02601
508-778-7770

John Cahill
Hertz Car Wash
480 Barnstable Road
Hyannis, MA 02601
508-775-5825

Brad Everson
Airport Rescue Fire Fighting Coordinator
480 Barnstable Road - 2nd Floor
Hyannis, MA 02601
508-778-7770

Jody Lewis
Allies Air
550 Barnstable Road
Hyannis, MA 02601
508-364-5786

Robert Griffin
Griffin Avionics
630 Barnstable Road
Hyannis, MA 02601
508-771-2638

Peter Farrell
Cape Air / Nantucket Airlines
660 Barnstable Road
Hyannis, MA 02601
508-790-3122

Peter Greaves
AMA Nantucket Inc.
130 Mary Dunn Way
Hyannis, MA 02601
508-771-8273

Cape Flight Instruction
Edmund Cottle
150 Mary Dunn Way
Hyannis, MA 02601
508-274-2424

7.3 Facility Security

The Airport is manned on a 24-hour basis. Airport security is maintained through several means. Access to Airport property is restricted by a perimeter fence which is inspected daily. Unsupervised entry within the perimeter fence is limited to approved personnel who carry Airport-assigned identification. Facility security staffing includes personnel from Airport Security, the Hyannis Police Department, and the Transportation Security Administration (TSA). All fuel transfer and storage areas are located within the

main perimeter fence and access to these areas is therefore restricted to approved personnel. The Airport's Gate F Fuel Farm facility is also surrounded by an additional security fence and can only be accessed by approved personnel. The fuel transfer facility, Gate F Fuel Farm, and overnight staging areas for mobile refuelers are equipped with adequate lighting to aid in the observation of a release and deter any acts of vandalism.

7.4 Wastewater Management

With the exception of the ARFF/SRE building (Figure 3), all tenant facilities located on the East Ramp currently discharge sanitary wastewater to on-site septic systems. The ARFF/SRE building, South Ramp Deicing Pad and all structures located on the North Ramp of the Airport, including the Main Terminal, ATCT, and all other tenant facilities (Figure 3) discharge wastewater including sanitary waste to the Barnstable Wastewater Treatment Facility. Oil/water separators (O/WS) are located at the ARFF/SRE building, South Ramp Deicing Pad, Griffin Avionics, and Cape Air/Nantucket Air hangar and provide pre-treatment of floor drain discharge from each facility prior to discharge to the Barnstable Wastewater Treatment Facility. The Avis and Hertz Car Wash, located south of Barnstable Road on Airport property, also utilize O/WS to pre-treat vehicle wash-water that is subsequently discharged to the Barnstable Wastewater Treatment Facility. The locations of these tenants are included on Figure 3.

7.5 Stormwater Management

Stormwater management at the Airport is provided through several systems. The majority of paved surfaces within the perimeter fence, including all runways, discharge stormwater to a system that transports stormwater to one of two surface water bodies located on Airport property, Upper Gate and Lewis ponds (Figure 3). A number of catch basins are not connected to the main drainage system, and infiltrate stormwater at their respective locations or discharge stormwater to infiltration basins. A site plan, identifying Airport drainage areas, stormwater conveyances, surface water outfalls, and retention basins is included as Figure 3. O/WS used to pre-treat stormwater are located at the Gate F Fuel Farm and prior to Outfall A. Vortech® water quality units located prior to each of the outfalls discharging to Upper Gate and Lewis ponds provide pretreatment to all stormwater discharged to the ponds. Calculated total suspended solid (TSS) removal rates for the water quality units range from 81% to 87%. Since the installation of the Vortech® units in 2011, 100% of stormwater discharged to the ponds receives pretreatment.

7.6 Spill History

Facilities having experienced one or more spills within a year of the effective date of the SPCCP are required to describe each spill, any corrective actions taken, and plans for preventing recurrence. Two spills have occurred at the Airport in 2019, as described below. No other spills have occurred at the Airport within the past five years of the effective date of this plan (April 2020).

- In November 2019, a release of 51 gallons of Jet A fuel occurred at the Gate F Fuel Farm from a hand operated pump located within the concrete secondary containment structure (Figure 2). The hand pump was not fully closed after the previous use and was the source of the release. Due to a storm drainage valve being opened, the release drained from the secondary containment structure into an O/WS. Airport personnel responded to the spill and applied absorbents. Airport personnel notified the fire department and the MassDEP within two hours of identifying the release. Clean Harbors and a Licensed Site Professional responded to the release and pumped out and cleaned the O/WS, recovered absorbents, and cleaned the interior of the concrete secondary structure with a citrus based degreaser. The release was contained by the concrete secondary containment and the OW/S and there was no discharge of pollutants to stormwater and/or surface waters. Due to this incident, a new procedure was implemented by the Airport on November 26, 2019 for the operation of the hand pump and storm water drain value at the fuel farm. The new procedure is as follows:

<u>Hand Pump Operation</u>

- Prior to hand pump usage by Airport staff, verify that the stormwater drain valve located adjacent to the secondary containment structure is in the closed position.
- Operate hand pump as necessary to obtain fuel sample.
- After sample collection, verify hand pump is in the closed position.

<u>Stormwater Drain Valve Operation</u>

- Inspect the concrete secondary containment pad and both interior drainage sumps for visual and olfactory evidence of OHM. Collect a representative sample of accumulated rainwater in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the secondary containment is assumed to be free of OHM.
- Next, open the first manhole cover (marked “DRAIN”) in front of the Gate F Fuel Farm located between the storm water valve and the fuel farm. Cones

or other means to mark the open hole must be utilized. Collect a representative sample of accumulated rainwater from within the manhole in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the drain manhole is assumed to be free of OHM. The adjacent drain valve should then be opened, and the Airport staff member will monitor the draining of the open manhole and secondary containment as the water moves into the adjacent O/WS prior to discharging into the stormwater system.

  - Once the draining of the open manhole and secondary containment is completed, the drain valve is to be closed. Additionally, the manhole is to be closed.

- On December 21, 2019 a release of one to two gallons of jet fuel occurred at the Rectrix Aerodrome Center Hanger while refueling a Hawker 827TX aircraft (Figure 2). The release occurred to the asphalt paved ground surface from venting of the right wing. Rectrix personnel responded to the spill immediately by placing granular absorbents and using pads to mop up the spilled jet fuel and notified the Airport. The absorbent and pads were placed into a 55-gallon drum for future off-site disposal. The release was contained to the asphalt pavement and there was no discharge of pollutants to stormwater and/or surface waters. Considering the nature of the release, no change to the fueling procedures or release response is necessary.

8.0 STORAGE AND TRANSFER OF FUEL

Significant volumes of virgin petroleum are stored at several locations at the Airport within storage tanks. Details concerning virgin petroleum storage are provided in Table 1 and Table 2, and locations are set forth on Figures 2. The Airport is also subject to the requirements in Federal Aviation Administration (FAA) Advisory Circular 150/5230-4, Aircraft Fuel Storage, Handling, and Dispensing on Airports.

Table 1. Barnstable Municipal Airport Virgin Petroleum Storage

Operator	Location	Product	Tank Type	Spill Protection	Volume (Gallons)
Rectrix / Air Cape Cod	Gate P Fuel Farm	Avgas[3]	AST[1]	Overfill protection, double walled tanks, interstitial monitoring	10,000
		Jet A			10,000
Griffin Avionics	Griffin Fuel Island	Avgas[3]	UST[2]	Overflow protection, leak detection, double walled piping with sumps/sensors, and line leak detection	(2) 10,000
Cape Air	Inside Cape Air Hangar	Avgas[3]	Portable AST[1]	Spill Containment Pallet	100

Operator	Location	Product	Tank Type	Spill Protection	Volume (Gallons)
Hertz Car Rental	Barnstable Road – Service Lot	Unleaded Gasoline	UST	Double walled, In tank monitor	10,000
Barnstable Municipal Airport	Gate F Fuel Farm	Unleaded Gasoline	AST	Overfill protection, concrete secondary containment, interstitial monitoring	4,000
		Diesel	AST		4,000
		Jet A	AST	Overfill protection, concrete secondary containment pad, double walled tanks, interstitial monitoring	(3) 20,000

Notes:

[1] Aboveground Storage Tank

[2] Underground Storage Tank

[3] Aviation Gas

Virgin petroleum products are transported by Airport and tenant mobile refuelers for the purpose of refueling aircraft. Fuel delivery and transfer procedures are described in greater detail in Sections 8.1 and 8.2. Specific characteristics of each mobile refueler are provided in Table 2, below.

Table 2. Barnstable Municipal Airport Mobile Refuelers

Operator	Product	Spill Prevention Equipment	Truck Designation	Storage Capacity (Gallons)
Barnstable Municipal Airport	Jet A	All mobile refuelers are equipped with absorbents, drip pans, magnetic catch basin covers, and oil booms to respond to the most likely quantity of oil that could be discharged (<10 gallons) during refueling activities	5249	5,000
			5250	5,000
			5251	3,000
Rectrix / Air Cape Cod	Avgas		44219	1,500
Rectrix Aerodrome	Jet A		5693	3,000
Cape Air	Avgas		4298	1,500
Griffin Avionics	Avgas		612	620
			4134	1,200

8.1 Fuel Delivery

Detailed fuel delivery procedures for the Airport are included as Appendix C and are described in general below.

8.1.1 Jet A Fuel

Jet A fuel is currently stored at the Airport's Gate F Fuel Farm in three 20,000-gallon ASTs, and at Rectrix / Air Cape Cod's Gate P Fuel Farm in a 10,000-gallon AST. Details concerning spill protection are included above in Table 1. Vendor delivery of Jet A fuel at the Gate F Fuel Farm is coordinated and supervised by Airport personnel; fuel delivery at the Gate P Fuel Farm is coordinated and supervised by Rectrix / Air Cape Cod personnel. Flexible transfer lines, used for connecting fuel delivery trucks to the above-ground transfer manifolds at both locations, are inspected prior to each fuel transfer, and are replaced as necessary. Fuel deliveries are generally made during daylight hours; however, after-hours deliveries are conducted when necessary. Direct communication between the refueling agent and Airport personnel is maintained throughout the transfer. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel shall ensure that spill response resources to clean up or contain a small spill are readily available.

Airport and Rectrix / Air Cape Cod personnel are responsible for the assessment of Jet A fuel quality at the time of delivery and for the inspection of all fuel transfer and containment equipment.

8.1.2 Aviation Gas

Aviation Gas (Avgas) is currently stored in two 10,000-gallon USTs located at Griffin Avionics and at Rectrix / Air Cape Cod's Gate P Fuel Farm in a 10,000-gallon AST. Details concerning spill protection are included above in Table 1. Avgas deliveries are made by several vendors for each receiving facility and are completed during normal business hours. Flexible transfer lines, used for connecting fuel delivery trucks to the transfer manifolds, are inspected prior to each fuel transfer, and are replaced as necessary. Direct communication between the delivery truck operator and tenant personnel is maintained throughout the transfer. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

In accordance with Federal Regulations 14 CFR 139, tenant operations involving the storage or transfer of Avgas must maintain personnel training programs. One supervisor from each refueling tenant must complete an aviation fuel training course at an approved FAA-sponsored fueling course. Following this training, supervisors shall train all other employees involved in storing, dispensing and handling fuel in fire safety. Records of employee training are maintained by the Airport Operations. Records of system checks and transfer equipment inspections are maintained by each tenant.

8.1.3 Unleaded Gasoline

Unleaded gasoline is currently stored in a 10,000-gallon UST located at Hertz Car Rental located at the Barnstable Road Service Lot and at the Gate F Fuel Farm in a 4,000-gallon AST. Details concerning spill protection are included above in Table 1. Direct connections between the delivery truck and the storage tank are accomplished through flexible transfer lines, which are inspected prior to each fuel transfer. Fuel flow during transfer is controlled by the delivery truck operator and incorporates a dead man switch. Delivery of unleaded gasoline to the Gate F Fuel Farm is supervised by Airport personnel. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.1.4 Diesel Fuel

Diesel fuel is currently stored at the Gate F Fuel Farm in a 4,000-gallon AST. Details concerning spill protection are included above in Table 1. Diesel fuel at the Gate F Fuel farm is used for the refueling of Airport service vehicles. Direct connections between the delivery truck and storage tank are accomplished through a flexible transfer line, which is inspected prior to each fuel transfer. Fuel flow during transfer is controlled by the tank truck operator and incorporates a dead man switch. Delivery of diesel is supervised by Airport personnel. Prior to delivery, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the vendor fuel delivery truck and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2 Mobile Refueler Operations

Transfer of fuel between mobile refueling trucks and aircraft occurs regularly at the Airport and is described in further detail below. Standard procedures for the transfer of fuel to mobile refuelers operated by the Airport are included as Appendix C. Details concerning spill protection are included above in Table 2.

During normal hours of operation, tenant-operated refuelers are staged at each respective tenant's apron terminal, where aircraft refueling typically occurs. The Airport's Jet A mobile refuelers are staged along the paved access way behind the Airport Operations building on the East Ramp. Prior to fuel transfer or during extended vehicle parking, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the Mobile Refueler. Drip pans are also placed under the fuel rack and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

40 CFR 112.7(c) and 112.8(c) require all mobile or portable fuel containers to be designed, positioned, and operated within a means of containment allowing for any discharge to be contained. Rule change EPA-HQ-OPA-2005-0001; FRL-8007-2 relieves airport refuelers from the "sized" secondary containment requirements established in 40 CFR 112.8(c)(2) and (11). All refueling of aircraft occurs over impervious surfaces, allowing for any discharge to be properly contained using the spill response resources maintained on each refueler, at each fuel storage location, and in the spill response trailer at the Airport Operations building. An O/WS, described in further detail in Section 10.2, provides secondary containment for the paved apron area at the Gate F Fuel Farm. All transfers of fuel at the Gate F Fuel Farm occur over this paved apron area, including delivery and transfer to mobile refuelers.

8.2.1 Transfer of Jet A to Mobile Refuelers

The Airport and Rectrix currently operate Jet A mobile refuelers. Jet A is transferred to the Airport's mobile refuelers at the Gate F Fuel Farm, and to the Rectrix mobile refueler at the Gate P Fuel Farm. Details concerning spill protection are included above in Table 2. Airport personnel conduct daily inspections of all associated transfer equipment, including transfer hoses, flow control devices, and spill prevention devices, as required by 139 CFR 327. Annual tank testing and maintenance are completed by outside contractors. Records of daily and annual inspections are maintained by the Airport and tenant Fueling Agents. A mobile refueler daily inspection sheet utilized by Airport Operations personnel is included as Appendix D.

Loading of Jet A refuelers is accomplished through the use of flexible transfer lines. Fuel flow is controlled by a dead man switch, held by the operator. Airport and Rectrix personnel are responsible for the proper function and alignment of all fuel transfer equipment during transfer of Jet A to mobile refuelers. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2.2 Transfer of Avgas to Tenant Mobile Refuelers

Fuel transfer of Avgas to tenant mobile refuelers occurs at both Rectrix / Air Cape Cod's AST and Griffin Avionic's USTs. Details concerning spill protection are included above in Table 2. Griffin and Cape Air refuel their refuelers at the Griffin fuel transfer station. Rectrix is the only tenant that utilizes the Avgas AST located at the Gate P Fuel Farm. All fuel transfers occur over well-lit, impervious surfaces, allowing for the observation and containment of any discharges. Transfer of fuel is performed using flexible transfer lines. Fuel flow to the refueler is controlled by a dead man switch, held by the refueler operator. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2.3 Transfer of Jet A to Aircraft

Jet A Fuel is transferred to aircraft on non-movement taxiway apron areas and aircraft parking areas by Airport Operations and Rectrix mobile refuelers. Details concerning spill protection are included above in Table 2. Airport Operations personnel conduct all transfer of Jet A fuel to aircraft other than Rectrix. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

8.2.4 Transfer of Avgas to Aircraft

Griffin, Cape Air, and Rectrix personnel transfer Avgas to aircraft on non-movement apron areas and aircraft parking areas. Details concerning spill protection are included above in Table 2. Only trained tenant personnel, as described in Sections 4.0 and 8.1.2, are authorized to dispense Avgas fuel to aircraft. Prior to transfer, magnetic storm drain covers are temporarily placed on all catch basins within proximity of the vehicle prior to fuel transfer. Drip pans are also placed under the fuel rack on the transfer vehicle and personnel ensure that spill response resources to clean up or contain a small spill are readily available.

9.0 STORAGE OF OTHER OHM

Other OHM is stored at several locations at the Airport within containers ranging in size from less than 5-gallons to 500-gallons. Details concerning 55-gallon and larger containers of other OHM (non-fueling related products) are provided in Table 3, and OHM storage locations are included on Figure 2.

Table 3. Other Airport OHM Storage Locations

Operator	Location	Product	Storage Vessel Type	Spill Protection	Volume (Gallons)
Barnstable Municipal Airport	Outside Airport ARFF/SRE Building	Waste Oil / Anti-freeze	AST	Leak detection, double walled with reinforced concrete	350/150
	Inside Airport ARFF/SRE Building	Anti-freeze	Drums	Spill Containment Pallet	55
		Diesel Exhaust Fluid			
		15W40			
		Grease			
		Hydraulic Oil			
		ATF			
		5W30 SYN			
		Waste Oil			
Rectrix / Air Cape Cod	Gate P Fuel Farm	Waste Absorbent	Drums	Spill Containment Pallet with overhead cover	55
		Waste Jet A Fuel			
		Avgas			
Rectrix Aerodrome	Inside Rectrix Hangar	Jet A	AST	Double walled	55
		Reclaimable Jet A Fuel	Drums	Spill Containment Workstation with lid	55
		Waste Oil			
		Waste Absorbent			
Griffin Avionics	Inside Griffin Hangar	Used Oil filters	Drums	Spill Containment Pallet	55
		Waste Oil			
		Avgas			
Cape Air	Inside Cape Air Hangar	Waste Oil	AST	Overflow detection, double walled	500
		Waste Oil	Drums	Spill Containment Pallet	55
		Hydraulic Oil			
		Used Oil Filters			
		Anti-freeze			
Allies Air	Inside Allies Air Hangar	Waste Oil	Drums	Spill Containment Pallet	55
AMA Nantucket Inc.	Inside AMA Nantucket Inc. Hangar	Waste Oil	Drums	Spill Containment Pallet	55
		Mineral Spirits			
Cape Flight Instruction	Inside Cape Flight Instruction Hangar	Waste Oil	Drums	Spill Containment Pallet	55
		Anti-freeze			
		Used Oil Filters			
Avis Car Wash	Barnstable Road – Service Lot	Car Washer Fluid	AST	O/WS	250
Hertz Car Wash	Barnstable Road – Service Lot	Car Washer Fluid	AST	O/WS	250

Note: The total number of drums of OHM located in tenant facilities may vary. Proper secondary containment must always be provided for all drums of OHM and petroleum storage ASTs.

9.1 OHM Usage in Portable Containers

OHM including lubricants, cleaners, car washer fluid and anti-freeze is dispensed into small containers from hand dispensers connected to larger containers. The larger containers are located within the interior of the ARFF/SRE building, tenant hangars, Hertz Car Wash, and Avis Car Wash. Any floor drains located within the buildings are connected to O/WS and discharge to the municipal sewer system. Details on spill protection is included above in Table 3.

9.2 OHM Stored in Portable Containers for Disposal

OHM including waste lubricants, cleaners, and anti-freeze is placed into 55-gallon drums for future off-site disposal. The 55-gallon drums are located within the interior of the ARFF/SRE building and tenant hangars and are located within secondary containment. Floor drains located within the buildings are connected to O/WS and discharge to the municipal sewer system. It is estimated that at any given time the Airport and tenants could have approximately 50 to 75 55-gallon drums of various OHM stored within buildings. Details on spill protection is included above in Table 3.

10.0 SPILL PREVENTION AND POTENTIAL SPILL PATHWAYS

Where experience indicates a reasonable potential for the release of oil to the environment, 40 CFR 112.7(b) requires that a SPCCP predict a flow pathway for any released material. Sanitary waste is the only material discharged to septic systems. Floor drains located within buildings are connected to O/WS and/or the municipal sewer system. Potential discharge pathways for each fuel storage and transfer area and OHM container storage area are predicted below.

10.1 Rectrix / Air Cape Cod Fuel Farm

The Rectrix/Air Cape Cod Fuel Farm is located in Drainage Area K as indicated on Figure 3. Standard operating procedures for the delivery and dispensing of Avgas from Rectrix/ Air Cape Cod Gate P Fuel Farm should limit the likelihood of a release during fuel transfer. Vehicle traffic at the AST locations and associated transfer areas is restricted. The fuel farm is equipped with an emergency shut-off. Rectrix/Air Cape Cod maintain fire-fighting spill response resources at the fuel farm as well as on-board their mobile refueler. The fuel farm is also equipped with appropriate fire extinguishers.

In the event of primary containment failure in the ASTs at the Rectrix / Air Cape Cod Gate P Fuel Farm, Avgas would be contained within the secondary containment wall, and personnel would be alerted. In the event of secondary containment failure, or a discharge during transfer to or from the AST, Avgas would be released to the

environment. Release migration would most likely occur in a northwesterly direction over the paved apron surface, toward a stormwater catch basin which ultimately discharges into Lewis Pond. Rectrix personnel have been directed to quickly install a magnetic catch basin cover and take preliminary response actions to minimize release migration.

10.2 Gate F Fuel Farm

The Gate F Fuel Farm is located in Drainage Area C as indicated on Figure 3. The Gate F Fuel Farm was improved in 2016 by removal of the USTs and installation of three new 20,000-gallon ASTs containing Jet A aviation fuel. A 4,000-gallon diesel and a 4,000-gallon unleaded gasoline AST are also located in this area. The new fuel farm improvements include secondary containment and leak detection monitoring as well as a 110% secondary containment concrete pad, a shut off valve, and a new O/WS that connects to the existing storm drain system in the vicinity of the three 20,000-gallon ASTs.

The 4,000-gallon diesel AST and 4,000-gallon unleaded gasoline AST are located adjacent to the secondary containment pad associated with the 20,000-gallon ASTs. Both tanks are located within secondary containment and have overfill prevention devices. Fixed fuel transfer lines are wrapped in secondary containment fiberglass housings. The paved vehicle staging area adjacent to the ASTs features an O/WS and oil level alarm. The transfer area is well-lit to aid in the observation of a release. Additional details concerning spill protection are included above in Table 1.

In the event of a release of Jet A fuel during fuel transfer, release migration would occur over the concrete containment pad and into a concrete sump. The sump features petroleum detection technology which includes audible and visual alarms to signal the presence of oil in the structure. A discharge of fuel to the paved surface at the Gate F Fuel Farm will collect in an O/WS and can be removed by a cleanup contractor for proper disposal.

In the event of failure of the unleaded gasoline/diesel AST or pump station, released fuel would migrate over paved surfaces into an O/WS. The O/WS features a high oil level audible and visual alarms to signal the presence of petroleum within the structure. A discharge of fuel to the paved surface at the Gate F Fuel Farm will collect in the O/WS and can be removed by a cleanup contractor for proper disposal.

ARFF/OPS personnel conduct FAA required testing of the fuel from the Gate F Jet A ASTs and the Airport's mobile refuelers on a daily basis, generating approximately 5 gallons of sample fuel per day. Sample fuel is returned to the tank via a recycling system located within the fuel farm.

10.3 Barnstable Municipal Airport – Airport ARFF/SRE Building

The ARFF/SRE Building is located in Drainage Area M. A double walled split AST is located outside, adjacent to the Airport ARFF/SRE Building. The AST contains 350-gallons of waste oil and 150-gallons of anti-freeze. The AST includes a primary steel tank and secondary containment with reinforced concrete and leak detection.

In the event of primary containment failure in the AST, waste oil and/or anti-freeze would be contained within the secondary containment wall, and personnel would be alerted. In the event of secondary containment failure, or a discharge during transfer to or from the AST, waste oil and/or anti-freeze would be released to the environment. Release migration would most likely occur in an eastern direction over the paved apron surface, toward a grass area with a with a leaching catch basin with an underground discharge chamber. ARFF/OPS personnel have been directed to quickly install a magnetic catch basin cover and take preliminary response actions to minimize release migration.

10.4 Barnstable Municipal Airport - Emergency Generators

All emergency generators at the Airport have been converted to natural gas.

10.5 Griffin Avionics

Griffin Avionics is located within Drainage Area F. Standard operating procedures for the delivery and dispensing of Avgas from the Griffin Avionics USTs should prevent a release during fuel transfer. Additionally, overfill prevention in each tank's transfer manifold prevents the transfer of Avgas above the tank's capacity. Griffin maintains fire extinguishers and spill response resources at the fuel transfer station as well as on-board their mobile fuel trucks.

In the event of a release during fuel delivery, or fuel transfer to mobile refuelers, fuel released to the paved surface would migrate toward and could potentially enter leaching catch basins and/or the Airport's stormwater system which ultimately discharges to Upper Gate Pond. In the event of primary containment failure in the Griffin USTs, Avgas would be released to the soils and fill material around and below the UST.

10.6 Refueling of Aircraft

Standard operating procedures for aircraft refueling reduce the potential for a discharge. Refueling of aircraft occurs on taxiway apron areas on both the North and East Ramps. There are no spill prevention systems associated with the refueling of aircraft. A release during refueling would result in a release to the paved apron surface, where the discharge could be contained using available spill response resources. Airport and tenant mobile refuelers are required to be equipped with spill response kits as described in Table 2, above. Additionally, impacts to the Airport's stormwater drainage system are minimized by the placement of magnetic mats over storm drain inlets prior to refueling operations.

10.7 Hertz Car Wash

Unleaded gasoline is stored and transferred at the Hertz Car Wash, located directly across Barnstable Road from the Airport. In the event of primary containment failure in the Hertz UST, released fuel would be contained within the secondary containment wall. In the event of secondary containment failure, fuel would be released to the soils and fill material around and under the UST.

In the event of a release during fuel transfer at the Hertz service station, spilled fuel could potentially migrate over paved surfaces and enter infiltrating catch basins located in the service station lots.

11.0 EMERGENCY RESPONSE ACTION PLAN

An Emergency Response Action Plan (ERAP) is intended to provide easy access to instructions for Airport Response Team personnel in the event of a release. An ERAP will remain attached as a preface to this SPCCP and be distributed to Response Team members at the discretion of the Program Manager. The ERAP will be kept on file and updated as described in Section 3.0 of this SPCCP.

The ERAP shall contain the following information, and shall be constructed to facilitate and expedite response to a release of threat of release of OHM:

1. Facility name, address, and general location;
2. 24-hour contact information for each Response Team Member;
3. 24-hour contact information for the Spill Response Program Manager and Coordinator;
4. Local, State, and Federal Emergency Response contact information;
5. Recommended guidelines for spill abatement, response, etc.;
6. Location of spill response materials/equipment;

7. A site map that includes the following (Figure 2 and 3):
    a. floor-drain, manhole, sewer grate locations, etc.
    b. location of oil and hazardous materials bulk storage areas
8. Additional Response Resources Contact Information (e.g., LSP, outside spill cleanup contractor); and
9. Forms to aid in proper documentation and reporting of a release.

A copy of the ERP is included as Preface I.

12.0 SPILL RESPONSE PROCEDURES

In the event of a release, or threat of release of OHM to the environment, personnel shall implement response actions to contain the release. The Spill Response Coordinator or Program Manager shall be notified as soon as possible. The following response actions should be followed for most releases.

Note: Any personnel undertaking any response activity is responsible for ensuring that appropriate, properly fitted, personnel protective equipment (PPE) is worn at all times.

12.1 General Response Procedures for Airport and Tenant Employees

Note: Only properly trained Airport and Tenant employees shall respond to a release of oil or hazardous materials.

1. Initiate evacuation, if necessary;
2. Notify Spill Response Coordinator or Program Manager, listed in Section 2.0;
3. Stop spill flow when possible without risk of personal injury to self or others;
4. Immediately deploy any readily available response resources (e.g., absorbent pads, drain covers, granulated absorbent, etc.);
5. Make the release area off limits to unauthorized personnel;
6. Restrict all sources of ignition when flammable substances are involved;
7. Continue response actions at the direction of the Spill Response Coordinator or Program Manager; and
8. Ensure that all contaminated response resources and PPE are properly containerized and labeled for disposal by a licensed hazardous waste handler.

The sequence of the initial response action may be altered depending upon the spill characteristics (i.e., type of material, quantity). The following section describes Spill Response Coordinator and Program Manager responsibilities during response actions.

12.1.1 Spill Response Coordinator

Note: If the Program Manager is unavailable, the Coordinator is authorized to activate emergency response contractors, and initiate any regulatory reporting procedures.

1. Evacuate any non-essential personnel, if necessary;
2. Eliminate the source of the release, if not already accomplished, without jeopardizing the health and safety of self or others;
3. Report the release to the appropriate local contacts (Airport Fire Department, Hyannis Fire Department, Emergency Response Contractors, LSP). When notifying any outside agency of a release of oil or hazardous material the following information, at minimum, should be provided:
    a. Name of individual reporting spill;
    b. Release location and Contact information;
    c. Substance released, estimated amount;
    d. Date and Time of release;
    e. Description of response actions, undertaken and planned;
    f. Other agencies notified or to be notified; and,
    g. Any other relevant information.
4. Direct the deployment of response resources and ensure their proper use;
5. Minimize the potential for environmental impact;
6. Notify LSP and emergency response contractors (Section 13.1) if necessary;
7. Notify the Program Manager and inform them of the release. Determine if release requires MassDEP or Federal notification, as described in Section 13.0;
8. Ensure that all contaminated response resources and PPE are properly containerized and labeled for disposal in accordance with applicable local, state and federal regulations by a licensed hazardous waste handler; and
9. Properly document all response activities; including generator information, response personnel, emergency contractor information, and any related correspondence.

12.1.2 Spill Response Program Manager

1. Determine if the release requires notification, as described in Section 13.0;

2. Ensure proper notification of authorities and/or outside response contractors (Sections 13.0 and 13.1);
3. Ensure proper documentation of release and response activities; a Spill Reporting Form is included as Appendix E;
4. Retain Hazardous Waste Manifests or Bills of Lading from licensed hazardous waste handlers; and,
5. Take additional measures, as necessary, to minimize potential for subsequent environmental impact (e.g., install absorbent boom at stormwater outfalls to capture stormwater-transported contaminants).

13.0 NOTIFICATION REQUIREMENTS

In response to a release of oil or hazardous materials, responsible parties are required to conduct response activities in accordance with Massachusetts General Laws, Chapter 21E, 40 CFR 112, and the Massachusetts Contingency Plan (310 CMR 40.0000). Notification of Local, State, or Federal agencies may be necessary. All releases, regardless of size or material, shall be reported to the Spill Response Coordinator or Program Manager. Similarly, any release that occurs due to tenant operations on Airport property must be reported to the Spill Response Coordinator or Program Manager.

The Spill Response Coordinator or Program Manager shall establish whether a harmful quantity has been released, and if the release requires notification of outside agencies. Federal regulations generally define an oil spill of harmful quantity as "….such quantities of oil determined to be harmful to the public health or welfare…..to include discharges which exceed applicable water quality standards…….or cause a film or sheen on the surface of the water, or cause a sludge or emulsion to be deposited beneath the water surface". These regulations are applicable to all navigable waters of the United States, Upper Gate and Lewis ponds are both considered navigable waters.

Massachusetts regulations 310 CMR 40.0000 define a release of 10 gallons or greater of oil or gasoline as a reportable quantity and notification to the MassDEP is required within two hours of obtaining knowledge of the release. Contaminants detected in the environment at or above threshold concentrations also require reporting to the MassDEP and are listed in 310 CMR 40.1600. Additionally, a release of oil or hazardous materials to a stormwater conveyance (e.g., leaching catch basins, culverts) requires MassDEP notification, regardless of the volume of OHM.

In the event of a single discharge of more than 1,000 gallons into or upon the navigable waters of the U.S. or adjoining shorelines, or two discharges greater than 42 gallons

within any 12 month period, the SPCCP shall be submitted to the EPA Region 1 Regional Administrator and the MassDEP for review.

13.1 Reporting to State and Federal Agencies

In accordance with Massachusetts Regulations 310 CMR 30.0000 and 310 CMR 40.0000, certain releases or threats of releases of a reportable quantity of oil and or hazardous materials must be reported to the MassDEP within two hours (www.state.ma.gov/dep). Federal reportable quantities for releases into soil, water and air are listed in Table 302.4 of 40 CFR 302.4. Each regulatory agency has these reportable quantities posted on its website.

If a harmful or reportable quantity, as defined by state and/or federal regulations, has been discharged, the spill should be reported to the following agencies:

National Response Center
24 Hour: 800-424-8802

Massachusetts Department of Environmental Protection Emergency Response Center
24-Hour Call Center: 888-304-1133

Massachusetts State Police / Hyannis Fire Department
911

Airport Rescue and Firefighting
508-778-7770

Barnstable Fire District Water Department

(To report a spill on Water Dept. property located north of 15/33)
Office: 508-362-6498

Supt. Thomas Rooney (24-Hour): 508-364-9359

The following information must be provided to State and Federal agencies when a spill is reported. All correspondence with Local, State, or Federal agencies should be recorded on a Spill Reporting Form, included as Appendix E.

1. Name, location and type of facility;
2. Person in charge of facility and phone number;
3. Name and phone number of person reporting;
4. Type and estimated amount of material;

5. Location of spill;
6. Time and date of incident;
7. Impacted waterways;
8. Whether or not storm drains have been impacted;
9. Cause of incident and equipment involved;
10. Injuries and/or property damage;
11. Duration of discharge;
12. Response Actions taken; and,
13. Agencies notified.

In the event of a large or complex release of oil or hazardous materials, the Airport will rely upon outside cleanup contractors to conduct cleanup activities. Spill containment and cleanup contractors and regulatory consultants are listed below.

Spill Containment and Cleanup:

Clean Harbors	800-645-8256
Moran Environmental Recovery	888-233-5338
Global Remediation	508-828-1005

Licensed Site Professional:

Horsley Witten Group, Inc.	508-833-6600
Bryan Massa, LSP 24-Hour Contact Number:	781-243-1527
Mark Nelson, LSP 24-Hour Contact Number:	508-566-0912

14.0 SPILL RESPONSE RESOURCES

A rapid spill response trailer is maintained at the ARFF/SRE Building. A complete inventory of the trailer's contents is included as Appendix F. Inventories are conducted regularly, and out-of-date equipment is replaced. A smaller spill kit is also maintained on each of the Airport's Mobile Refuelers, at the Gate F Fuel Farm, and at the Airport ARFF/SRE Building waste oil and anti-freeze storage AST. Each tenant involved in the

storage or transfer of fuel is responsible for maintaining their own spill response resources on each of their vehicles and at fuel storage locations.

15.0 INSPECTIONS

The Airport conducts regular inspections of all OHM storage areas including fuel storage tanks, mobile refuelers, waste storage area, and drum storage areas. Inspections are conducted by properly trained Airport personnel and are recorded on inspection sheets. Inspection sheets are kept on file at the Airport Operations office for a minimum of three years, as required by 40 CFR 112.7. Mobile refueler and Gate F Fuel Farm inspection sheets are included as Appendix D and G.

15.1 Daily Inspections

On a daily basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. General Condition;
2. Filter Sumps;
3. Filter differential pressure;
4. Deadman control operation;
5. Brake Interlocks;
6. Nozzle fueling pressure
7. Hoses, Swivels and Nozzles;
8. Ground reels, cables, and clamps;
9. Fire extinguishers
10. Tanker troughs;
11. Tanker sumps;
12. Condensation in air tanks;
13. Ladders
14. Mechanics tools; and
15. Diesel fuel level.

The Gate F Fuel Farm is inspected for:

1. Tank sumps;

2. Fuel sumps;
3. Filter sumps;
4. Hoses, swivels, and nozzles;
5. Ground reels, cables, and clamps;
6. Fire extinguishers;
7. Waste fuel tanks;
8. Differential pressure; and
9. Primary pressure.

Hand Pump Operation

- Prior to hand pump usage by Airport staff, verify that the stormwater drain valve located adjacent to the secondary containment structure is in the closed position.
- Operate hand pump as necessary to obtain fuel sample.
- After sample collection, verify hand pump is in the closed position.

Stormwater Drain Valve

- Following a rain event, Inspect the concrete secondary containment pad and both interior drainage sumps for visual and olfactory evidence of OHM. Collect a representative sample of accumulated rainwater in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the secondary containment is assumed to be free of OHM.
- Next, open the first manhole cover (marked "DRAIN") in front of the Gate F Fuel Farm located between the storm water valve and the fuel farm. Cones or other means to mark the open hole must be utilized. Collect a representative sample of accumulated rainwater from within the manhole in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the drain manhole is assumed to be free of OHM. The adjacent drain valve should then be opened, and the Airport staff member will monitor the draining of the open manhole and secondary containment as the water moves into the adjacent O/WS prior to discharging into the stormwater system.
- Once the draining of the open manhole and secondary containment is completed, the drain valve is to be closed. Additionally, the manhole is to be closed.

15.2 Monthly Inspections

On a monthly basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. Filtration test;
2. Grounding cable continuity test;
3. Nozzle screens;
4. Signs and placards;
5. Meter seals;
6. Emergency shutdown system;
7. Tanker interiors;
8. Tanker vents and dome covers;
9. Tanker trough drains; and
10. Fire extinguishers.

The Gate F Fuel Farm is inspected for:

1. Grounding cable continuity;
2. Nozzle screens;
3. Signs and placards;
4. Floating suctions; and
5. Fire extinguishers.

15.3 Quarterly Inspections

On a quarterly basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. General condition;
2. Pressure controls;
3. Secondary pressure; and,
4. Water defense system.
5. The Gate F Fuel Farm is inspected for:

6. Tank high level controls;
7. Emergency shutdown system; and
8. Water defense system.

15.4 Annual Inspections

On a quarterly basis, Airport personnel conduct inspections of Airport mobile refuelers and the Gate F Fuel Farm for the following:

Mobile refuelers are inspected for:

1. Filter elements;
2. Pressure gauges; and
3. Fuel meters.

The Gate F Fuel Farm is inspected for:

1. Interior tank condition;
2. Pressure gauges;
3. Filter elements;
4. Line strainers;
5. Filter/separator heaters;
6. Tank vents;
7. Tank high level controls; and
8. Facility condition.

15.5 Additional Inspection and Maintenance

Annual cleaning and testing of fuel storage tanks are conducted by outside contractors. Tanks are inspected for wall thickness, corrosion, and tank integrity.

40 CFR 112.7(i) mandates; “If a field-constructed above ground container undergoes a repair, alteration, reconstruction, or a change in service that might affect the risk of a discharge or failure due to brittle fracture or other catastrophe, or has discharged oil or failed due to brittle fracture failure or other catastrophe, (the Airport) must evaluate the container for risk of discharge due to brittle fracture or other catastrophe, and as necessary, take appropriate action.”

15.6 PROACTIVE MEASURES AND RECOMMENDATIONS FOR SPILL PREVENTION AND SAFETY

To comply with the Local, State and Federal regulations cited in this Plan, the Airport and its Tenants will continue to incorporate spill prevention and safety measures into daily operations. Refer to Appendix H for examples of the spill response and safety equipment referenced below, and for a list of equipment vendors. The following are general recommendations:

- Storage locations for oil and/or hazardous materials will be indoors or otherwise protected from the environment, and, when feasible, within secondary containment capable of holding 110% of the volume of the largest container or tank.
- All flammables should be kept in a suitable storage locker or facility.
- Each facility should be equipped with enough spill response resources to respond to likely releases from aircraft maintenance, refueling, and fuel transfer.
- Each of the Airport operated mobile refuelers, as well as each fuel transfer depot, should be outfitted with magnetic catch basin covers, Speedi-dry™, a "pop-up pool" to contain a release of up to 65 gallons, and other approved response equipment.
- Quantities of hazardous materials should be kept to a minimum. Only frequently used hazardous materials should be kept in storage. Expired, obsolete, or otherwise unused hazardous materials should be disposed of properly.
- Empty drums and containers should be properly disposed of and not allowed to accumulate in bulk.
- Refueling and fuel transfer should only occur in areas that are covered by an impervious layer of asphalt or concrete.
- Waste oil storage by the Airport and its Tenants shall comply with Federal, State, and local regulations related to waste accumulation volume and time limits. Waste oil drums shall be clearly labeled, and all manifests kept on file for three years.

Indoor liquid hazardous materials should be stored in a location such that a spill from the largest container or tank will be contained or absorbed. All hazardous materials should be stored in flame retardant storage lockers and transferred to proper dispensing containers prior to use.

- Compressed gases should be stored in locations protected from vehicles traffic, including forklifts, by protective bollards or concrete walls or dikes.

- General waste should be separated from hazardous waste prior to disposal. Hazardous waste, including hazardous waste containers, should not be disposed of in general waste dumpsters.
- Safety Data Sheets (SDS) shall be posted in an area that is obvious to all employees in the case of an emergency (i.e. in area of use). SDSs shall be updated regularly. Emergency eyewash and shower stations shall be located in areas where oil and/or hazardous materials are used.
- Aircraft de-icing should only be performed in the designated area.
- Delivery of fuel from transport vehicles to storage tanks shall be supervised by a properly trained employee or supervisor.
- Transfer of fuel to mobile refuelers or aircraft shall only by conducted by properly trained employees.
- Whenever possible, biodegradable materials should be substituted for hazardous materials.

16.0 REFERENCES

Epsilon Associates, Inc. November 2004. Spill Pollution Control and Countermeasures Plan for Nantucket Memorial Airport, Nantucket, Massachusetts.

Federal Aviation Administration FAR 139 Airport Certification Manual, Barnstable Municipal Airport.

Horsley Witten Group, Inc. July 2003 (Revised). Spill Prevention Control and Countermeasures Plan, Barnstable Municipal Airport.

Massachusetts Department of Environmental Protection. April 3, 2006. Massachusetts Contingency Plan: Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup, 310 CMR 40.0000.

Massachusetts Department of Environmental Protection. Massachusetts General Laws: Massachusetts Oil and Hazardous Material Release Prevention and Response Act, Chapter 21E.

Massachusetts Board of Fire Prevention Regulations. June 16, 2003. Massachusetts Comprehensive Fire Safety Code, Tanks and Containers, 527 CMR 9.00.

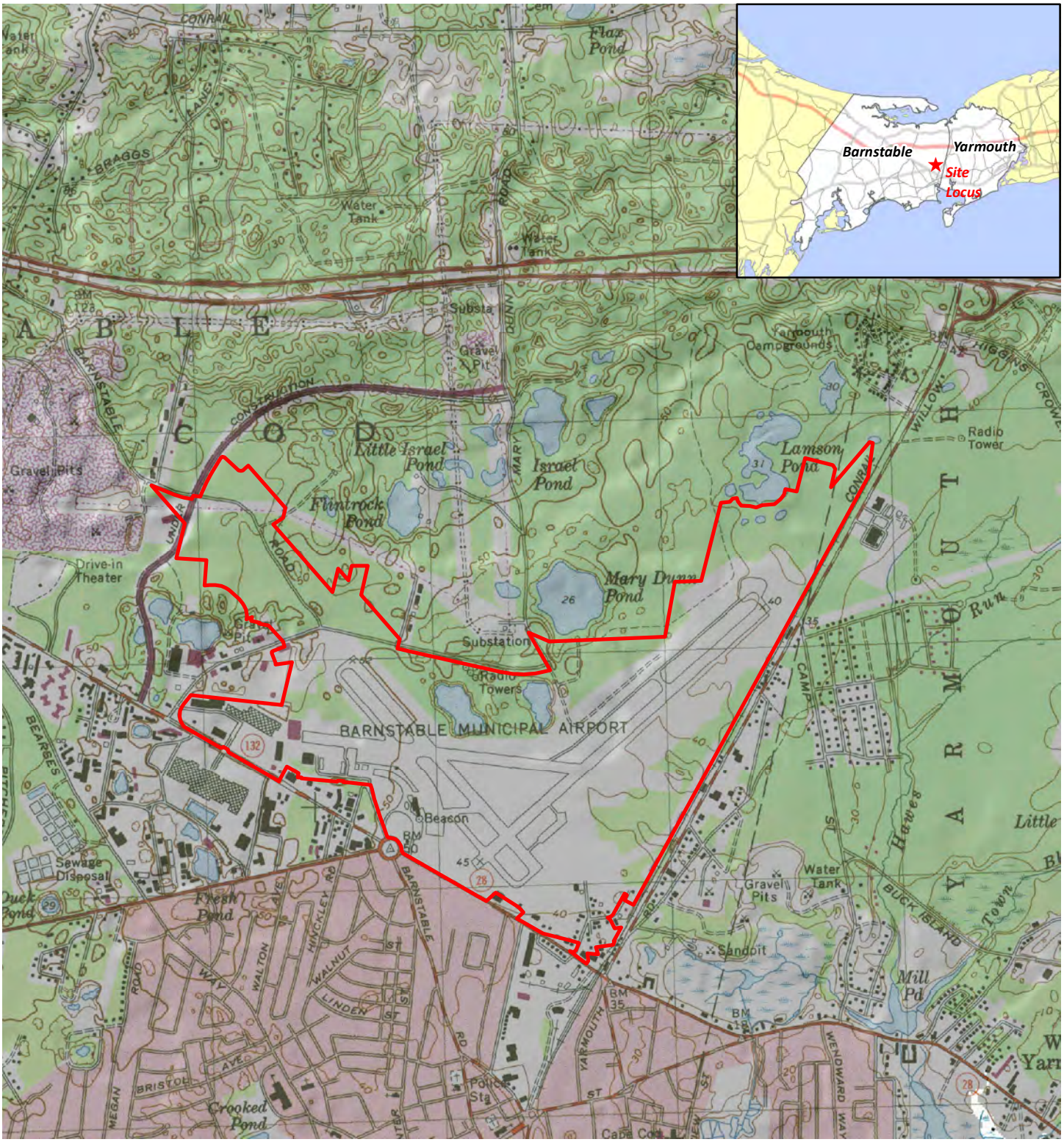
Massachusetts Department of Environmental Protection. See their homepage at www.state.ma.gov/dep

Massachusetts Department of Environmental Protection. 2000. Massachusetts Hazardous Waste Regulations: Massachusetts Department of Environmental Protection, 310 CMR 30.

U.S. Environmental Protection Agency. July 17, 2002. Environmental Protection Agency Federal Regulations 40 CFR 112.
U.S. Environmental Protection Agency, Oil Program. See their homepage at www.epa.gov/oilspill/

FIGURES

Figure 1 – USGS Locus
Figure 2 – Oil and Hazardous Materials Storage Map
Figure 3 – Site Plan



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*2016 NAIP imagery service

Legend

Barnstable Municipal Airport Property Boundary

N

0 2,000

1" = 2,000 feet

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

USGS Locus
Barnstable Municipal Airport
Hyannis, MA

Date: 11/18/2019 Figure 1

*Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Legend

Barnstable Municipal Airport Property Boundary

Mobile Refueler Parking Areas

Note:
AST = Above ground storage tank
UST = Underground Storage Tank
Avgas = Aviation Gas
LL = Low Lead
ARFF/SRE = Aircraft Rescue and Fire Fighting/Snow Removal Equipment

N

0 800

1" = 800 feet

Property = 645 acres

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

Oil and Hazardous Materials (OHM) Storage Map and Spill Locations Cape Cod Gateway Airport Hyannis, MA

Date: 1/10/2020

Figure 2

**Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services*

**2016 NAIP imagery service*

Document Path: H:\Projects\HYA\14105 BMA On-Call Eng Services\GIS\Maps\191230_SPCCP OHM Storage Map.mxd

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DRAINAGE AREA A

DRAINAGE AREA E

DRAINAGE AREA F

DRAINAGE AREA G

DRAINAGE AREA O

DRAINAGE AREA N

DRAINAGE AREA B

DRAINAGE AREA C

DRAINAGE AREA D

DRAINAGE AREA M

DRAINAGE AREA H

DRAINAGE AREA I

DRAINAGE AREA J

DRAINAGE AREA K

DRAINAGE AREA L

VORTECHS WATER QUALITY UNIT

VORTECHS WATER QUALITY UNITS

INFILTRATION BASIN

UNDERGROUND RECHARGE STRUCTURES

D/WS AND PUMP STATION

DISCHARGE CONTROL VALVES

MAIN TERMINAL APRON

EAST RAMP APRON

RUNWAY 15/33 (5252' X 150')

RUNWAY 6/24 (5425' X 150')

TAXIWAY A

TAXIWAY B

TAXIWAY C

TAXIWAY D

MARY DUNN POND

LEWIS POND

UPPER GATE POND

LEGEND

RW1533-29 CB: Catchbasin
RW1533-29 LCB: Leaching Catchbasin
RW1533-29 LCB/RD: Leaching Catchbasin / Roof Drain
RW1533-29 LCB/UGDC: Leaching Catchbasin with Underground Discharge Chamber
RW1533-29 LB: Leaching Basin with No Catchment
O/WS: Oil Water Separator
Airport Property Line
BIO: Bioretention Basin
T31 VORTECH: CONTECH Water Quality Structure

NOTE:

All locations of buildings, utilities, and surface features derived from Town of Barnstable, Massachusetts, Geographic Information System. Location and nature of stormwater utilities based upon data provided by Edwards and Kelcey Barnstable Municipal Airport Drainage Plan (07/07), and field inspection of select utilities by Horsley Witten on July 15, 2008.

AIRPORT BUILDINGS/AREAS TABLE

NO.	BUILDING
1	RECTRIX AERODOME CENTER HANGAR
2	CAPE AIR/NANTUCKET AIR HANGAR
3	GRIFFIN AVIONICS
4	GRIFFIN AVIONICS FUEL STATION
5	SPECIALIZED AUTOMOTIVE
6	HANGAR 2 – CAPE AIR / AIRPORT MAINTENANCE
7	GATE F FUEL FARM
8	HANGAR BUILDING (VACANT)
9	ALLIES AIR
10	MAIN TERMINAL BUILDING
11	MAIN TERMINAL GENERATOR
12	AIR TRAFFIC CONTROL TOWER (ATCT)
13	SOUTH RAMP DEICING PAD
14	AIRPORT ARFF/SRE FACILITY
15	RECTRIX/AIR CAPE COD
16	RECTRIX/AIR CAPE COD FUEL FARM
17	AIRPORT LIGHTING VAULT
18	BMA T-HANGAR
19	AMA NANTUCKET INC.
20	CAPEFLIGHT INSTRUCTION
21	HYANNIS HANGAR LLC
22	HEXAGON HANGAR
23	KINGSBURY AVIATION (BUILDING 1)
24	KINGSBURY AVIATION (BUILDING 2)
25	STEAMSHIP AUTH. PARKING LOT
26	HERTZ CAR WASH
27	AVIS CAR WASH
28	BUDGET TRUCK RENTAL

GRAPHIC SCALE

250 0 125 250 500 1000

(IN FEET)

Horsley Witten Group
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date: 5/26/2021 | Designed By: GWTH | Drawn By: GWTH | Checked By: JEL

Plan Title:

SITE PLAN
CAPE COD GATEWAY AIRPORT
HYANNIS, MA

Prepared For:
Barnstable Municipal Airport
480 Barnstable Road
Hyannis, MA 02601
(508) 775-2020

Revisions

1	12-27-11	ERK	Update to Drainage Plan
2	4-13-12	JEL	Update to Drainage Plan
3	4-27-12	GH	Update to Drainage Plan
4	1-25-13	JEL	Update to Drainage Plan
5	7-29-13	GH	Update to Drainage Plan
6	9-30-15	JEL	SWPPP Figure 3
7	12-29-15	GH	SWPPP Figure 3
8	12-31-19	LEN/ PAC	Update to Drainage Plan

Project Number: 14105

Figure: 3

APPENDIX A

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

CERTIFICATION OF THE APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA

Federal Regulation 40 CFR 112.20, Appendix C, requires a facility to certify whether or not it is considered to pose a substantial harm. A determination of substantial harm status is based on the criteria below.

Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons?

The facility does not transfer oil over water. The facility does have a total oil storage capacity greater than or equal to 42,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground storage tank plus sufficient freeboard to allow for precipitation within any aboveground storage tank area?

No, the facility does not have a total oil storage capacity greater than or equal to 1,000,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR 112, or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments? For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (see Appendix E to 40 CFR 112, section 13, for availability) and the applicable Area Contingency Plan.

No, the facility does not have a total storage capacity greater than or equal to 1,000,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and is the facility located at a distance (as calculated using the appropriate formula in Attachment C-III to 40 CFR 112, or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake.

No, the facility does not have a total storage capacity greater than or equal to 1,000,000 gallons.

Does the facility have a total oil storage capacity greater than or equal to 1,000,000 gallons and has the facility experienced a reportable spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

No, the facility does not have a total storage capacity greater than or equal to 1,000,000 gallons.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Signature: _____

Name:_____

Title:_____

Date:_____

APPENDIX B

RAINWATER INSPECTION FORM

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

RAINWATER INSPECTION FORM

After rain events, the Barnstable Municipal Airport is required to inspect the secondary containment structure at the Gate F Fuel Farm to ensure that retained rainwater will not cause a discharge as described in 40 CFR§ 112.1(b) upon release. As required by 40 CFR§ 112.8(c)(3)(iii), the Airport must keep adequate records of these inspections and events where drainage of uncontaminated rainwater from secondary containment occurs.

Following a rain event, an Airport staff member will perform an inspection of any standing water within the concrete secondary containment structure and both interior sumps. The inspection will include the collection of a representative rainwater sample in a clear container for visual and olfactory analysis for indications of oil and/or hazardous materials (OHM).

If no visual or olfactory evidence of OHM is observed within the sample, the Airport staff member will record the observations on the inspection form and will proceed with discharging accumulated rainwater from the concrete secondary containment structure and interior sumps. The Airport staff member must observe the entire drainage of accumulated rainwater. While draining is occurring, the Gate F Fuel Farm must not be utilized for fuel sample collection and/or fuel transfers. Upon completion, the Airport staff member **must** close the drain valve. Under no circumstance is the drain valve allowed to remain open after the rainwater discharge. Details for completing the accumulated rainwater discharge is set forth below.

- Complete a full walk around the Gate F Fuel Farm to inspect for any visual signs of a potential leak from the ASTs and confirm that the alarm monitoring system is operating properly. Inspect the concrete secondary containment pad and both interior drainage sumps for visual and olfactory evidence of OHM. Collect a representative sample of accumulated rainwater in a clear container and record the observations on the inspection form. If no visual or olfactory indication of OHM is observed, the accumulated rainwater within the secondary containment is assumed to be free of OHM.
- The drain valve should then be opened, and the Airport staff member will monitor the draining of the secondary containment as the water moves into the adjacent O/WS prior to discharging into the stormwater system.
- Once the draining of the secondary containment is completed, the drain valve is to be closed.

RAINWATER INSPECTION FORM

PERSONNEL COMPLETING INSPECTION:

INSPECTION PERSONNEL:	ORGANIZATION / TITLE:

INSPECTION DATE: _____ INSPECTION TIME: _____

CONFIRM INSPECTION COMPLETED FOR ACTIVE LEAKS / SIGNS OF POTENTIAL LEAKS.

FULL WALK AROUND OF FUEL FARM: _____
ALL SENSORS IN NORMAL ("GREEN") MODE: _____

VISUAL AND OLFACTORY ASSESSMENT OF RAINWATER IN SECONDARY CONTAINMENT STRUCTURES SHOULD BE RECORDED ON THIS RAINWATER INSPECTION REPORTING FORM. ALL RECORDS ARE TO BE MAINTAINED AT THE AIRPORT MANAGER'S OFFICE.

ASSESSMENT SUMMARY:

_____
_____
_____
_____
_____
_____
_____
_____

LOCATION	TIME:	COLOR:	ODOR:	CLARITY:	FLOATING SOLIDS:	SETTLED SOLIDS:	SUSPENDED SOLIDS:	FOAM:	OIL SHEEN:	OTHER INDICATORS
Secondary Containment Concrete Pad										
Interior Sumps										

TIME VALVE OPENED: _____ TIME VALVE CLOSED: _____

RAINWATER INSPECTION FORM IS TO BE STORED IN THE AIRPORT MANAGER'S OFFICE

APPENDIX C

FUEL DELIVERY AND TRANSFER PROCEDURES

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

FUEL DELIVERY AND TRANSFER PROCEDURES

The following general procedures should be followed during fuel delivery, transfer of fuel, and refueling of aircraft. Refer to the Airport's Fuel Fire Safety Training manual for additional descriptions of fuel transfer procedures.

Vendor Delivery of Fuel

1. The vendor driver shall coordinate delivery time with the appropriate Tenant supervisor and/or HYA personnel.
2. All paperwork associated with the order should be inspected prior to transfer to ensure delivery of proper fuel quantity and type.
3. Appropriately trained tenant and/or HYA personnel shall be present throughout entire fuel transfer.
4. Tenant and/or HYA personnel shall identify the appropriate storage tank for delivery, and identify/inspect all mechanisms or piping associated with the fuel transfer.
5. Tenant and Airport storage tanks should be inspected for capacity prior to fuel transfer.
6. All vehicles in the fuel transfer area shall be turned off, and sources of ignition eliminated.
7. A sample of the vendor fuel, for delivery, should be obtained in a suitable container. The sampled fuel should be inspected for color and odor. Results should be recorded and compared against original order.
8. The delivery vehicle should be parked within the designated fuel delivery area as directed by Airport personnel. Wheels should be chocked to prevent vehicle movement during transfer. Magnetic storm drain covers shall be placed on all catch basins within proximity of the delivery vehicle prior to fuel transfer.
9. A drip pan shall be placed under the fuel rack on the vendor fuel delivery truck.
10. During fuel transfer, at least one attendant shall be present at all times. There shall be no use of automated pumping systems.
11. The delivery vehicle shall be properly grounded and bonded, in accordance with the Airport's Fuel Fire Safety Training Manual.
12. The truck operator shall be responsible for making all connections between the truck and any piping involved in the fuel transfer. Both the operator and tenant or HYA personnel shall inspect transfer piping, prior to fuel transfer.

13. Spill response resources should be readily available, for cleanup or containment of small spills. The tenant or HYA personnel shall be responsible for the proper management of small spills.
14. The truck operator and tenant or HYA personnel shall be aware of all safety and fuel flow control devices, such as pump shut-off and “dead-man” switches.
15. Once fuel transfer has begun, the tenant or HYA personnel shall inspect all fittings, couplings, hoses, and associated transfer materials, for evidence of leaking.
16. In the event of a release, or threat of release, due to a failure in any of the fuel transfer equipment, fuel flow shall cease immediately, and appropriate response actions shall be taken to clean up the release.
17. Fuel transfer shall not occur unless all transfer equipment is being used as intended and approved.
18. Upon completion of fuel transfer, the truck operator shall ensure that all transfer lines are cleared of their contents before disconnect, so as to avoid any releases during disconnect.
19. Tenant or HYA personnel shall be responsible for the proper stowing of all facility transfer lines.
20. Any sample material, or absorbent materials used to clean up a small release shall be properly disposed of by a licensed disposal company. Proper paperwork shall be kept on file, and the Spill Response Coordinator or Program Manager notified.

Transfer of Fuel to Mobile Refuelers

1. Transfer of fuel to mobile refuelers shall be done by appropriately trained tenant and HYA personnel (the operator), only.
2. All fuel flow control devices, such as “dead-man” switches, shall be inspected for proper operation prior to fuel transfer.
3. All vehicles in the fuel transfer area shall be turned off, and sources of ignition eliminated.
4. The Mobile Refueler should be parked within the designated fuel delivery area as directed by Airport personnel. Wheels should be chocked to prevent vehicle movement during transfer. Magnetic storm drain covers shall be placed on all catch basins within proximity of the vehicle prior to fuel transfer.
5. A drip pan shall be placed under the fuel rack on the vehicle.
6. The operator shall ensure that spill response resources to clean up or contain a small spill are readily available.

7. The mobile refueler shall be properly grounded and bonded, in accordance with the Airport's Fuel Fire Safety Training Manual.
8. Fuel transfer equipment, including hose material and couplings, should of an appropriate material, and shall be inspected by the operator prior to use.
9. Transfer lines should implement dry-disconnect fittings and couplings that prevent the flow of fuel until properly connected to a mated coupling.
10. The operator shall be aware of all safety and fuel flow control devices, such as pump shut-off and "dead-man" switches.
11. The operator shall gauge mobile refueler tank capacity prior to fuel transfer, and monitor tank level during transfer.
12. Once fuel transfer has begun, the operator shall inspect all fittings, couplings, hoses, and associated transfer materials, for evidence of leaking.
13. During fuel transfer, at least one attendant shall be present at all times. There shall be no use of automated pumping systems.
14. In the event of a release, or threat of release, due to a failure in any of the fuel transfer equipment, fuel flow shall cease immediately, and appropriate response actions shall be taken to cleanup the release.
15. Fuel transfer shall not occur unless all transfer equipment is being used as intended and approved.
16. Upon completion of fuel transfer, the operator shall ensure that all transfer lines are cleared of their contents before disconnect, so as to avoid any releases during disconnect.
17. The Operator shall be responsible for the proper stowing of all facility transfer lines.
18. Any absorbent materials used to clean up a small release shall be properly disposed of by a licensed disposal company. Proper paperwork shall be kept on file, and the Spill Response Coordinator or Program Manager notified.

Transfer of Fuel to Aircraft

1. Transfer of fuel from mobile refuelers to aircraft shall be done by appropriately trained tenant and HYA personnel (the operator), only.
2. All fuel flow control devices, such as "dead-man" switches, shall be inspected for proper operation prior to fuel transfer.
3. All vehicles in the fuel transfer area shall be turned off, and sources of ignition eliminated.

4. Wheels should be chocked to prevent vehicle movement during transfer. Magnetic storm drain covers shall be placed on all catch basins within proximity of the vehicle prior to fuel transfer.
5. A drip pan shall be placed under the fuel rack on the vendor fuel delivery truck.
6. All fueling of aircraft shall be completed outside of hangars or maintenance buildings.
7. Personnel shall observe the locations of any stormwater catch basins and avoid refueling at or near such structures.
8. The operator shall ensure that spill response resources to clean up or contain a small spill are readily available.
9. The mobile refueler and aircraft shall be properly grounded and bonded, in accordance with the Airport's Fuel Fire Safety Training Manual.
10. Fuel transfer equipment, including hose material and couplings, should of an appropriate material, and shall be inspected by the operator prior to use.
11. Fuel transfer lines should be located, or "run-out" so as to avoid being run-over, or otherwise damaged, by vehicle traffic in the area.
12. Transfer lines should implement dry-disconnect fittings and couplings that prevent the flow of fuel until properly connected to a mated coupling.
13. The operator shall be aware of all safety and fuel flow control devices, such as pump shut-off and "dead-man" switches.
14. Before fueling, the operator shall ensure that all related aircraft equipment is prepared to accept transferred fuel.
15. While fuel is being transferred, the operator shall position themselves to visually observe transfer lines for leaks or other failures.
16. During fuel transfer, at least one attendant shall be present at all times. There shall be no use of automated pumping systems.
17. Once fuel transfer has begun, the operator shall inspect all fittings, couplings, hoses, and associated transfer materials, for evidence of leaking.
18. In the event of a release, or threat of release, due to a failure in any of the fuel transfer equipment, fuel flow shall cease immediately, and appropriate response actions shall be taken to clean up the release.
19. Fuel transfer shall not occur unless all transfer equipment is being used as intended and approved.
20. Upon completion of fuel transfer, the operator shall ensure that all transfer lines are cleared of their contents before disconnect, so as to avoid any releases during disconnect.

21. The Operator shall be responsible for the proper stowing of all facility transfer lines.
22. Any absorbent materials used to clean up a small release shall be properly disposed of by a licensed disposal company. Proper paperwork shall be kept on file, and the Spill Response Coordinator or Program Manager notified.

APPENDIX D

MOBILE REFULERS INSPECTION SHEET

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DAILY [illegible]

AIRCRAFT FUELING EQUIPMENT CHECKS

STATION ____ EQUIPMENT ID# ____ MONTH ____ YEAR ____

DAILY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1. GENERAL CONDITION																															
2. FILTER SUMPS - RECORD RATINGS																															
3. FILTER DIFFERENTIAL PRESSURE - Record PSI																															
4. DEADMAN CONTROLS																															
5. SAFETY INTERLOCKS																															
6. NOZZLE FUELING PRESSURE - Record PSI																															
7. HOSES, NOZZLES & SWIVELS																															
8. STATIC REELS, CABLES & CLAMPS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9. LIFT PLATFORMS																															
10. FIRE EXTINGUISHERS																															
11. SURGE/WASTE TANKS																															
12. AIR TANKS																															
13. REFUELING TRUCK TROUGHS																															
14. REFUELING TRUCK SUMPS - RECORD RATINGS																															
15. REFUELING TRUCK BOTTOM LOADING PRE-CHECK																															
IDENDIFICATION OF PERSON PERFORMING TASKS OR PERSON ACCEPTING RESPONSIBILITY THAT TASKS WERE PERFORMED																															

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); NU = NOT USED; NA = NOT APPLICABLE

RATING OF SUMP SAMPLES: SOLIDS - 1 = CLEAN, 2 = SLIGHT, 3 = PARTICULATE, 4 = DIRTY; MOISTURE CONTENT - A = BRIGHT, B = HAZY, C = CLOUDY, D = WET (FREE WATER), E = SURFACTANTS

REMARKS:

ATA FORM 103.04A
2/16/04

RETAIN ON FILE FOR 12 MONTHS

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Monthly Truck Check.

AIRCRAFT FUELING EQUIPMENT CHECKS

STATION	EQUIPMENT ID#	MONTH	YEAR

MONTHLY	CONDITION CODE	DATE	CHECKED BY
1. FILTRATION & FREE WATER TESTS			
2. STATIC SYSTEM CONTINUITY TEST (RECORD RESULTS)			
3. NOZZLE SCREENS			
4. FUEL HOSES			
5. SIGNS, LABELS & PLACARDS			
6. METER SEALS			
7. FIRE EXTINGUISHERS			
8. EMERGENCY SHUTDOWN SYSTEM			
9. DEADMAN CONTROL SYSTEM			
10. LIFT PLATFORMS			
11. REFUELING TRUCK INTERIORS			
12. REFUELING TRUCK VENTS & DOME COVERS			
13. REFUELING TRUCK TROUGH DRAINS			
Check First			

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); N/U = NOT USED; N/A = NOT APPLICABLE

ATA FORM 103-64B
11/9/95

RETAIN ON FILE FOR 12 MONTHS

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QUARTERLY & ANNUAL TANK CHECK.

QUARTERLY, SEMI-ANNUAL & ANNUAL AIRCRAFT FUELING EQUIPMENT CHECKS

STATION | EQUIPMENT ID# | YEAR

QUARTERLY CHECKS		1ST QTR	2ND QTR	3RD QTR	4TH QTR
1. VEHICLE INSPECTION	CONDITION CODE				
	CHECKED BY & DATE:				
2. PRESSURE CONTROLS	CONDITION CODE				
RECORD PRIMARY & SECONDARY FUEL PRESSURE SETTING (PSI)					
	CHECKED BY & DATE:				
3. WATER DEFENSE SYSTEM - EXTERNAL CHECK	CONDITION CODE				
	CHECKED BY & DATE:				
4. INTERNAL VALVE CHECK	CONDITION CODE				
	CHECKED BY & DATE:				

SEMI-ANNUAL FUEL FACILITY CHECKS (ONLY REQUIRED IF USING REUSEABLE COUPLINGS ON FUEL HOSES)		ID #	ID #	ID #	ID #	ID #
1. PERIODIC HOSE PRESSURE TEST						
	TEST PRESSURE (PSI)	N/A				
	CONDITION CODE					
	CHECKED BY & DATE:					

ANNUAL CHECKS	
1. FILTER ELEMENT CHANGE	CONDITION CODE
	CHECKED BY & DATE:
2. FUELING & DIFFERENTIAL PRESSURE GAUGES	CONDITION CODE
	CHECKED BY & DATE:
3. METER CALIBRATION	CONDITION CODE
	CHECKED BY & DATE:
4. WATER DEFENSE SYSTEM INSPECTION & TES	CONDITION CODE
	CHECKED BY & DATE:

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); NIU = NOT IN USE; N/A = NOT APPLICABLE

ATA FORM 103.04C
11/9/05

RETAIN ON FILE FOR 12 MONTHS

Daily Sump LOG TRUCKS.

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MONTH_____ YEAR:_____

INSPECTION LOG OF AIRCRAFT FUEL SERVICING EQUIPMENT

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TANK	SUMP																				
FILTER	SUMP																				

		21	22	23	24	25	26	27	28	29	30	31
TANK	SUMP											
FILTER	SUMP											

TRUCK NO:_____

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TANK	SUMP																				
FILTER	SUMP																				

		21	22	23	24	25	26	27	28	29	30	31
TANK	SUMP											
FILTER	SUMP											

TRUCK NO:_____

Example: indicating sumped fuel was clear and bright done by J.Doe

NOTE Solids 1) clear 2) slight 3) particulate 4) dirty

Water a) bright b) hazy c) cloudy d) wet

0-07 form 10/99

QUARTERLY INSPECTION - MOBILE FUELERS

Airport: *HYA* Fueling Agent: _____

Date: ____/____/____ Inspector: _____

S - Satisfactory U - Unsatisfactory R - Remark Below	SERIAL #:			SERIAL #:			SERIAL #:		
	S	U	R	S	U	R	S	U	R
	JET A / AVGAS			JET A / AVGAS			JET A / AVGAS		
No Smoking sign in cab									
Flammability Signs/Haz Mat Placards all sides									
Bonding Cables and Clips functional									
Deadman Control for all nozzles									
2 Fire Extinguishers - Proper Type/ Inspected									
Emergency Shutoffs operable and marked									
No Fuel Leaks - Hoses/Gaskets/Valves									
Vehicle Exhaust System - Shielded/Leak free									
No evidence of Smoking- No ashtray in cab									
Vehicle Parking - 10' apart/50' from buildings									
Explosion proof electrical / Light lens intact									
Ignition Sources (Clothing, Shoes, Matches)									
Brake Interlock System									
Proper Fueling Procedures Observed									
Fueling Personnel Meet Training Requirements									
Fueling Personnel Training Records maintained									

No. of Mobile Fuelers

Jet A _____

100 LL _____

Other _____

Remarks:

APPENDIX E

RELEASE NOTIFICATION FORM

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

RELEASE NOTIFICATION FORM

A. Incident Description

Date:_____ Reporter:_____
Time of Incident:_____ Time of Report:_____
Facility Name:_____
Facility Telephone #:_____
Location of Release:_____
Facility Location:_____
Street Address:_____

B. Release Description

Type of material(s) released:_____
Estimated quantity released:_____
Were there injuries to anyone on site?:_____
Did the release impact a catch basin or storm drain?:_____
Describe the ground surface that the release occurred over:_____
_____
Did the release enter or travel along underground utilities (pipes, conduit, etc.)?:
_____
How did the release occur?_____
_____
Other details:_____
_____
Are any surface waters impacted, or in danger of being impacted?
_____
_____

C. Spill Response Program Notification Requirements

IN THE EVENT OF ANY RELEASE, NOTIFY:
PROGRAM MANAGER KATIE SERVIS 508-775-2020
SPILL RESPONSE COORDINATOR ROBERT HOLZMAN 508-778-7770
BARNSTABLE MUNICIPAL AIRPORT RESCUE AND FIREFIGHTING 508-778-7770
IF RELEASE IS LOCATED ON WATER DEPT. PROPERTY NORTH OF 15/33, NOTIFY:
SUPT. THOMAS ROONEY 508-364-9359

D. **State and Federal Notification Requirements**

Does Massachusetts Department of Environmental Protection (DEP) Require Notification?

- **A release of ≥ 10 Gallons Gas/Diesel/Oil requires DEP Notification**
- **A release of an unknown quantity requires DEP notification**

If required, notify Massachusetts DEP at 888-304-1133*

Does the USCG/Federal National Response Center (NRC) Require Notification?

- **A discharge to navigable waters requires USCG/NRC notification**
- **A sheen on water surface is considered a harmful quantity**

If required, notify USCG/NRC at 800-424-8802*

* **record any instructions/information from DEP or NRC in the space provided below.**

E. **Generator Information**

Generator/Responsible Party: _____
Street Address: _____
City/Town: _____State:_____
Contact Person: _____Title: _____
Contact Telephone Number: _____

F. **Documentation of Notification**
(record time of agency/contact notification, instructions, reporting number, etc. here)

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

APPENDIX F

SPILL RESPONSE INVENTORY

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

SPILL RESPONSE RESOURCE INVENTORY

The following items are maintained in a rapid response trailer, located outside the Airport Operations Building. The following quantities were accurate as of January 2020, the date of last inventory. Additional response resources are found on each mobile refueler, and at each fuel transfer depot.

Item	Quantity
Absorbent Spill Pads	200
Speedi-Dry ™	3.5 bags
Spaghetti Booms	(2) 10’ Booms
Pig Mats™ (for acids)	1 roll
Peat Absorbent	5 bags
Lite-Dri™ Absorbent	7 bags
Sea Booms	2
Oil-only Booms	6 rolls
Booms	2 rolls
Miscellaneous Booms	2 rolls
Kollect-a-Kem Pads™	100
Tear off Roll	(1) 25’ Boom
ARG-DRI™ Dikes	2 boxes
Face shields	12
ARG™ Pillows	24
Acid-Resistant PVC gloves	12 pair
Hard Hats	7
Boot covers	60
Tyvek™, x-large coverall	50
Tyvek™, large coverall	50
Tyvek™, medium coverall	50
Vinyl gloves	25
Grate covers	1
Drum patch kit	1
Coal shovel	1
Spade shovel	1
Squeegee	2
Push broom	1
Chocks	1 set
35-Gallon Drum	1

APPENDIX G

FUEL FARM INSPECTION SHEETS

FUEL FARM

FUEL FACILITY CHECKS

STATION | FACILITY | MONTH | YEAR

DAILY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1. GENERAL CONDITION OF TANK YARD																															
2. SECURITY, FIRE & SAFETY DEFICIENCIES																															
3. HOSES, SWIVELS, NOZZLES & COUPLERS																															
4. STATIC REELS, CABLES AND CLAMPS																															
5. FIRE EXTINGUISHERS																															
FUEL LEAKS																															
STORAGE TANK SUMP																															
FILTER SUMP																															
FILTER DIFF. PRESSURE																															
IDENTIFICATION OF PERSON PERFORMING TASKS OR PERSON ACCEPTING RESPONSIBILITY THAT TASKS WERE PERFORMED																															

MONTHLY		DATE	SIGNATURE
1. FILTRATION & FREE WATER TEST			
2. BONDING CABLE CONTINUITY			
3. NOZZLE SCREENS			
4. SIGNS, LABELS & PLACARDS			
5. FLOATING SUCTION			

MONTHLY		DATE	SIGNATURE
6. FIRE EXTINGUISHERS			

CONDITION CODES:

S = SATISFACTORY
C = COMMENT
N/U = NOT USED
N/A = NOT APPLICABLE

NOTE - RECORD SUMP RESULTS & FILTER DIFFERENTIAL PRESSURE ON SEPARATE FORM.

REMARKS:

ATA FORM 103.01A
11/9/2005

RETAIN ON FILE FOR 12 MONTHS

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FUEL FARM MONTHLY CHECK.

AIRCRAFT **FUEL FACILITY CHECKS**		STATION	EQUIPMENT ID#	MONTH YEAR
MONTHLY	CONDITION CODE	DATE	CHECKED BY	
1. FILTRATION & FREE WATER TEST				
2. STATIC SYSTEM CONTINUITY TEST				
3. NOZZLE SCREENS				
4. FUEL HOSES				
5. SIGNS, PLACARDS & LABELS				
6. METER SEALS				
7. FIRE EXTINGUISHERS				
8. EMERGENCY FUEL SHUTOFF SYSTEM				
9. LIFT PLATFORMS				
10. TANK INTERIORS				
11. TANK VENTS & DOWN COMER				
12. TANK TROUGH DRAINS				
REMARKS:				

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); NU = NOT USED; NA = NOT APPLICABLE

RETAIN ON FILE FOR 12 MONTHS

ATA FORM 103.04B
2/15/04

Figure 6-2.8. Form 103.04B - Monthly

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Quarterly Fuel Farm Check.

QUARTERLY FUEL FACILITY CHECKS

	STATION		FACILITY		QUARTER	YEAR
1. EMERGENCY SHUTOFF SYS.	ID #	ID #	ID #	ID #	ID #	ID #
DATE & CONDITION CODE						
CHECKED BY:						
2. WATER DEFENSE SYSTEMS						
DATE & CONDITION CODE						
CHECKED BY:						
3. TANK HIGH LEVEL CONTROLS						
DATE & CONDITION CODE						
CHECKED BY:						
4. RECLAIM TANK INSPECTION						
DATE & CONDITION CODE						
RECORD INSP. RESULTS ON 103.07						
CHECKED BY:						

SEMI-ANNUAL FUEL FACILITY CHECKS (ONLY REQUIRED IF USING REUSEABLE COUPLINGS ON FUEL HOSES)

1. PERIODIC HOSE PRESS. TEST	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #
TEST PRESSURE (PSI)										
DATE & CONDITION CODE	N/A									
CHECKED BY:										

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); N/U = NOT USED; N/A = NOT APPLICABLE

RETAIN ON FILE FOR 12 MONTHS

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Farm

ANNUAL FUEL FACILITY CHECKS

	STATION		FACILITY		YEAR	
1. STORAGE TANK INTERIORS	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #	ID #
DATE & CONDITION CODE										
CHECKED BY:										
2. DIFFERENTIAL PRESS GAUGES										
DATE & CONDITION CODE										
CHECKED BY:										
3. FILTER ELEMENTS										
DATE & CONDITION CODE										
CHECKED BY:										
4. FILTER/SEPARATOR HEATERS										
DATE & CONDITION CODE										
CHECKED BY:										
5. TANK VENTS										
DATE & CONDITION CODE										
CHECKED BY:										
6. CATHODIC PROTECTION										
DATE & CONDITION CODE										
CHECKED BY:										
7. LINE STRAINERS										
DATE & CONDITION CODE										
CHECKED BY:										
8. WATER DEFENSE SYSTEM										
DATE & CONDITION CODE										
CHECKED BY:										

REMARKS:

CONDITION CODES: S = SATISFACTORY; C = COMMENT (COMMENT REQUIRED IN REMARKS SECTION); N/U = NOT USED; N/A = NOT APPLICABLE

RETAIN ON FILE FOR 12 MONTHS

ATA FORM 103.01D
11/9/05

QUARTERLY INSPECTION - FUEL STORAGE AREAS

Airport: *HYA* **Fueling Agent:** _____

Date: ____/____/____ **Inspector:** _____

S - Satisfactory U - Unsatisfactory R - Remark Below	Jet A Section			100LL Section			Other _____		
	S	U	R	S	U	R	S	U	R
Fencing / Locks / Signs									
Piping protected from vehicles									
No Smoking signs posted									
Deadman Controls for loading station									
2 Fire Extinguishers-Inspected/Accessible									
Boldly Marked Emergency Cutoffs-Location									
No Fuel Leaks									
Bonding wire/clips at loading stations/operable									
Piping / Pumps bonded & grounded									
No vegetation or materials to spread fire									
No evidence of Smoking									
Hoses in good condition									
Explosion Proof Electrical Equipment									

Remarks:

APPENDIX H

SPILL RESPONSE PRODUCTS AND VENDORS

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN
BARNSTABLE MUNICIPAL AIRPORT
HYANNIS, MASSACHUSETTS

SPILL RESPONSE PRODUCTS AND VENDORS

Storm Drain Hood

Magnetic Storm Drain Cover

Containment Berm

Collapsible Containment Pool

Loose Absorbent

Leak/Spill Containment

Secondary Containment

Portable Spill Kit

Absorbent Boom

Secondary Containment

Vendor Information:

New Pig Corporation
1-800-HOT-HOGS® (468-4647)
www.newpig.com

Arcus Absorbents, Inc.
1-877-227-6727
www.arcusabsorbents.com/

Interstate Products
1-800-474-7294
www.interstateproducts.com

West Coast Spill Supplies
1-888-548-3800
www.spillsupply.com/

SpillKits911
1-800-474-5911
www.spillkits911.com/

Guardian Environmental
1-860-350-2200
www.guardianenvironmental.com

Complete Environmental Products, Inc.
1-800-444-4237
www.cepsorbents.com/

Ben Meadows
1-800-241-6401
www.benmeadows.com

Final Environmental Impact Report
EEA No. 16640

CAPE COD GATEWAY AIRPORT

MASTER PLAN IMPROVEMENT PROJECTS

APPENDICES A-J

Epsilon ASSOCIATES INC.

September 16, 2024

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APPENDIX E

Aircraft Deicing and Washing Program

AIRCRAFT DEICING AND WASHING PROGRAM
BARNSTABLE MUNICIPAL AIRPORT
480 BARNSTABLE ROAD
HYANNIS, MASSACHUSETTS

1.0 INTRODUCTION

This Aircraft Deicing and Washing Program has been prepared for the Barnstable Municipal Airport (the Airport), 480 Barnstable Road, Hyannis, Massachusetts. The purpose of the Program is to establish procedures for Airport tenants to follow during aircraft deicing and washing at the Airport's South Ramp Deicing Pad. The Program is intended to protect groundwater and surface water resources at the Airport, and maintain compliance with local, state, and federal regulations.

Aircraft deicing activities at the Barnstable Municipal Airport (Airport) currently occur on a regular basis during the winter months at three designated deicing locations (Figure 1):

- South Ramp Deicing Area;
- Rectrix Aerodrome Facility Deicing Area; and
- East Ramp General Aviation Deicing Area.

Due to construction completion of the new South Ramp Deicing Pad in October 2015, the Rectrix Aerodrome and East Ramp General Aviation deicing areas were removed from active operations. The paved apron in the South Ramp Deicing Pad drains to a single, centrally located catch basin that discharges to the Barnstable Water Pollution Control Facility (WPCF) during aircraft deicing or washing. During all other times, this same catch basin discharges to the Airport's stormwater conveyance system that ultimately discharges to Upper Gate Pond. The discharge system is controlled through a series of manual gate valves that are operated by Airport Operations personnel. **Notification of Airport Operations prior to deicing or washing is required, to confirm that the system is discharging to the WPCF.**

Photo 1: Stormwater gate valve and operating position indicators.

PLEASE NOTE:
The South Ramp Deicing Pad is located within a "Secured Area." This Secured Area is regulated under TSAR 1542, and any enplaning and deplaning of passengers in this area during deicing operations is **strictly prohibited**.

The South Ramp Deicing and Washing Pad was constructed by the Airport to provide tenants and aircraft operators with a central location to complete these activities, and reduce the potential for environmental impacts. The Massachusetts Department of Environmental Protection (DEP), Cape Cod Commission (CCC), Barnstable Department of Public Works (DPW), and Barnstable WPCF have reviewed the construction plans and may conduct further review and/or inspection of the operations and record keeping procedures. Compliance with the procedures and requirements established in this Program is necessary to avoid increased oversight or potential penalties from these agencies.

2.0 TENANT AND OPERATOR TRAINING

It will be the responsibility of the Airport tenants to notify Airport Operations of their intent to deice or wash aircraft. Prior to using the South Ramp pad for deicing or washing aircraft, aircraft operators or tenants must attend a brief training session with Airport Operations to familiarize themselves with the system components and procedures.

3.0 DEICING FLUID AND DETERGENT FORMULATION AND MONITORING

Due to the decreased environmental impacts over alternative formulations, the Airport currently requires all tenants to utilize Type I propylene glycol based deicing fluids. The use of Type IV deicing fluids is currently being reviewed by the WPCF. Tenants will be notified if Type IV deicing fluids are approved for use. Types II and III deicing fluids are not commonly supplied for use by civilian air transportation airlines, and are prohibited from use at the Airport. Tenants are required to maintain Material Safety Data Sheets (MSDS), purchase orders, invoices, or other similar documentation sufficient to determine the classification of deicing fluid formulations in use, and provide copies of these records to the Airport Managers office prior to their use at the Airport.

In accordance with Barnstable WPCF requirements and the Airport's Stormwater Pollution Prevention Plan (SWPPP), each aircraft owner / tenant agent must maintain a record of the cumulative amount of deicing fluid used each day. The cumulative record should be stored with the deicing fluid equipment or at the hangar office. The volume of deicing fluid used during each calendar month shall be reported to the Airport Manager's office at the end of each month, or at any time Airport Management requests this information. A monthly log sheet is attached.

The Barnstable WPCF has designated the following detergents to be utilized during aircraft washing. **No other detergent products are permitted for use at this time**. An owner / tenant can submit an alternative detergent for review by the WPCF. Please contact Airport

Management for more information on the WPCF approval process. Each aircraft owner / tenant will be responsible for purchasing the approved detergent(s) for their own use. Detergents are to be applied in accordance with the manufacturer's recommendations and only at the specified dilution.

WPCF APPROVED DETERGENTS:

- SIMPLE GREEN™ AIRCRAFT AND PRECISION CLEANER

The South Ramp deicing and washing pad features an oil water separator (O/WS) and pump station with an integrated Mission pump monitoring system. During aircraft deicing or washing (when the pump station is in operation), the Mission pump monitoring system will notify the Barnstable WPCF. The Mission pump monitoring system and Airport Operations notification procedures described in Sections 4.0 and 5.0 are intended to provide a record log of activity for the deicing / washing pad. In the event that any issues are noted at the WPCF, the record log will be reviewed by Airport Management to identify potentially responsible parties. The Airport will not be held liable for any tenant activities, including any that may result from unauthorized use of the deicing pad, use of deicing or detergent products other than those specified here, or activities that are inconsistent with this Program. Unauthorized use of the deicing pad could result in harmful discharges to Upper Gate Pond or the Barnstable WPCF, and any responsible parties may be subject to penalties or enforcement actions from DEP, DPW, and/or the Barnstable WPCF.

4.0 AIRCRAFT DEICING PROCEDURES

The following procedures shall be followed by all aircraft owners and have been established to minimize potential impacts associated with deicing activities at the Airport and maintain compliance with Barnstable WPCF requirements.

- The deice pad will be closed immediately when snow accumulates on the pad, and will remain closed until any standing snow has been removed. The pad is included in the Priority 1 areas of the airport, these are the first areas cleared when snow removal operations are initiated. Tenants are notified of the deice pad status through the Snow Reports issued by Airport Operations on an as-needed basis during winter weather events. Airport Operations will confirm that standing snow has been removed prior to confirming the pad is open for deicing.
- **Prior to any aircraft entering the South Ramp deicing pad, the designated aircraft operator or tenant agent must notify Airport Operations.** Airport Operations will record the request in the daily log, noting the aircraft operator / tenant agent, aircraft call sign / registration number, date, and time of request. The operator must wait for confirmation from Airport Operations that the pad is open for deicing.
- **Airport Operations will log the time the valve for deicing or washing was opened on the appropriate valve use log.**
- The aircraft owner must immediately notify Airport Operations if an aircraft is disabled in the South Ramp Deicing Area. It is the aircraft owner's responsibility to ensure

prompt arrangements are made with Airport Operations or through their own resources to have the disabled aircraft removed from the Secure Area.

- After acknowledgement from Airport Operations, the aircraft operator shall park and adequately secure the aircraft within the demarcated area.
- Prior to any application of deicing fluid Airport Operations will close the manual gate valve labeled "Stormwater Discharge", and open the valve labeled "Deicing / Wash Discharge." Each of the gate valves features a visual indicator on the pavement surface to confirm proper orientation.
- The aircraft operator may then proceed with the application of deicing fluid on the aircraft. Deicing fluids shall be limited to those products that have received prior approval by Airport Management.
- Excessive use of deicing fluid is prohibited.
- After the aircraft has been deiced or washed, the aircraft operator / tenant agent shall notify Airport Operations that operations are complete. Airport Operations will log the notification.
- **Airport Operations will log the time the valve for deicing or washing was closed on the appropriate valve use log.**
- After the gate valves have been positioned to discharge to the airfield stormwater conveyance system, Airport Operations will log the operation.

5.0 AIRCRAFT WASHING PROCEDURES

The following procedures shall be followed by all aircraft owners and have been established to minimize potential impacts associated with aircraft washing activities at the Airport and maintain compliance with Barnstable WPCF requirements. Washing of aircraft is only permitted within tenant hangars that have permitted floor drains discharging to the Barnstable WPCF and/or at the South Ramp deicing / washing pad.

- The washing pad will be closed immediately when snow accumulates on the pad, and will remain closed until any standing snow has been removed. The pad is included in the Priority 1 areas of the airport, these are the first areas cleared when snow removal operations are initiated. Tenants are notified of the deice pad status through the Snow Reports issued by Airport Operations on an as-needed basis during winter weather events. Airport Operations will confirm that standing snow has been removed prior to confirming the pad is open for washing.
- **Prior to any aircraft entering the South Ramp washing pad, the designated aircraft operator or tenant agent must notify Airport Operations.** Airport Operations will record the request in the daily log, noting the aircraft operator / tenant agent, aircraft call sign / registration number, date, and time of request. The operator must wait for confirmation from Airport Operations that the pad is open for washing.
- **Airport Operations will log the time the valve for deicing or washing was opened on the appropriate valve use log.**

- The aircraft owner must immediately notify Airport Operations if an aircraft is disabled in the South Ramp Deicing Area. It is the aircraft owner's responsibility to ensure prompt arrangements are made with Airport Operations or through their own resources to have the disabled aircraft removed from the Secure Area.
- After acknowledgement from Airport Operations, the aircraft operator shall park and secure the aircraft within the demarcated area.
- Prior to any rinsing or application of detergent fluid, Airport Operations will close the manual gate valve labeled "Stormwater Discharge", and open the valve labeled "Deicing / Wash Discharge". Each of the gate valves features a visual indicator on the pavement surface to confirm proper orientation.
- The aircraft operator or tenant agent may then proceed with rinsing / washing the aircraft. Detergents shall be limited to those products that have received prior approval by Airport Management and the Barnstable WPCF.
- Washing of engine bays is prohibited.
- Upon completion, the aircraft operator / tenant agent shall notify Airport Operations. Airport Operations will log the notification.
- **Airport Operations will log the time the valve for deicing or washing was closed on the appropriate valve use log.**
- After the gate valves have been positioned to discharge to the airfield stormwater conveyance system, Airport Operations will log the operation.

The construction of the South Ramp Deicing and Washing Pad was completed by the Airport to provide tenants with a centralized location to conduct these activities, while reducing the potential environmental impact. Tenant compliance with the procedures and requirements established in this Program is necessary to avoid increased oversight or potential penalties from state and local regulatory agencies. Should you have any questions regarding any of these matters, please contact the Airport Manager's office.

Barnstable Municipal Airport (HYA) – Deice/Wash Pad Valve Log

Month: _____ Year: _____

Date	Time Valves Opened to WPCF	Time Valve Closed to WPCF	Date	Time Valve Opened to WPCF	Time Valve Closed to WPCF
1			17		
2			18		
3			19		
4			20		
5			21		
6			22		
7			23		
8			24		
9			25		
10			26		
11			27		
12			28		
13			29		
14			30		
15			31		
16					

Note: The deicing/wash pad valves must remain in position to discharge into the storm water system. Any time the valves are switched to discharge to the Barnstable Water Pollution Control Facility (WPCF) the operation must be logged, similarly the time the valves are returned to storm water must be logged.

APPENDIX F

NPDES – 1: ROUTINE FACILITY INSPECTION FORM

FORM NPDES – 1
ROUTINE FACILITY INSPECTION FORM

STORMWATER POLLUTION PREVENTION PLAN
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS

NPDES – 1: ROUTINE FACILITY INSPECTION FORM

Cape Cod Gateway Airport is required to document the findings of each routine facility inspection performed and maintain the documentation onsite with the Stormwater Pollution Prevention Plan (SWPPP) as required in Part 3.1.6 of the 2021 MSGP. Routine facility inspections shall be conducted by the Program Manager or Coordinator or designated staff at least four times a year, and monthly during the deicing season. The Airport is not required to submit routine facility inspection findings to EPA, unless specifically requested to do so.

INSPECTION DATE :_____

INSPECTION TIME :_____

PERSONNEL COMPLETING INSPECTION:
(Note: at least one member of the SWPPP Team is required to participate in Routine Facility Inspections)

INSPECTION PERSONNEL:	ORGANIZATION / TITLE:

WEATHER CONDITIONS AT TIME OF INSPECTION:
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds

❑ Other: Temperature:

Weather Previous 24 Hours:
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds

❑ Other: Temperature:

Weather Previous 72 Hours:
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds

❑ Other: Temperature:

AREAS OF INSPECTION:

FACILITY:	OBSERVATIONS / DEFICIENCIES:	RECOMMENDED ACTIONS:
Rectrix Hangar / Apron		
Cape Air Hangar / Apron		
Griffin Hangar / Apron		
Griffin Fuel Island		
Hangar II / Apron		
Gate F Fuel Farm		
Allies Air Hangar / Apron		
Former Ops Garage / Apron		
East Ramp Apron		
Main Terminal / Apron		
South Ramp Deicing Pad		
North Ramp Apron		
Budget Car Service Facility		
Hertz Car Service Facility		
Hertz Fuel Island		
Avis Car Service Facility		
ARFF Facility		
OPS Facility		
Rectrix /Air Cape Cod Hangar / Apron (East Ramp)		
Rectrix / Air Cape Cod Gate P Fuel Farm		
Cape Flight Instruction Hangar / Apron		
AMA Nantucket Inc.		
Hyannis Hangar / Apron		
Hexagon Hangar / Apron		
Steamship Authority Parking Lots		

OUTFALL:	DISCHARGE OBSERVED (YES / NO)	OBSERVATIONS / DEFICIENCIES:	RECOMMENDED ACTIONS:
Outfall A			
Outfall B			
Outfall C			
Outfall D			
Outfall E			
Outfall F			
Outfall H			
Outfall J			
Outfall J-A			

ROUTINE FACILITY INSPECTION SUMMARY:

Previously unidentified discharges of pollutants from the site:

_____

_____

Control measures needing maintenance or repairs:

_____

_____

Failed control measures that need replacement:

_____

_____

Incidents of noncompliance observed:

_____

_____

Additional control measures needed to comply with the permit requirements:

_____

_____

ALL RECORDS ARE TO BE MAINTAINED AT THE AIRPORT MANAGER'S OFFICE.

Certification Statement (Refer to MSGP Subpart 11 Appendix B for Signatory Requirements)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date Signed: _____

APPENDIX G

NPDES – 2: QUARTERLY VISUAL ASSESSMENT FORM

STORMWATER POLLUTION PREVENTION PLAN
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS

NPDES 2: QUARTERLY VISUAL ASSESSMENT FORM

On a quarterly basis, the Cape Cod Gateway Airport is required to collect a stormwater sample from each outfall and conduct a visual assessment of each sample. The visual assessment must be conducted by qualified personnel, with at least one member of the Airport's stormwater pollution prevention team participating.

Stormwater discharge samples must be collected within the first 30 minutes of an actual discharge from a storm event. If it is not possible to collect the sample within the first 30 minutes of discharge, the sample must be collected as soon as practicable after the first 30 minutes and the sampling personnel must document why it was not possible to take samples within the first 30 minutes. Stormwater discharge sampling shall not occur within 72 hours (three days) of a previous storm event. According to Section 3.2.4.3 of the MSGP, at least one quarterly visual assessment must capture snowmelt discharge. Any deviations from the schedule for visual assessments and/or monitoring must be documented, along with the reason for the deviations.

Visual Assessments include the visual inspection of the stormwater sample for color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution.

PERSONNEL COMPLETING INSPECTION:
(Note: at least one member of the SWPPP Team is required to participate in Quarterly Visual Assessments)

INSPECTION PERSONNEL:	**ORGANIZATION / TITLE:**

INSPECTION DATE: _____
INSPECTION TIME: _____

WEATHER CONDITIONS AT TIME OF ASSESSMENT:

_____

_____

Time of Initial Discharge:

_____

Nature of Discharge (snowmelt, runoff):

_____

Weather Previous 24 Hours:

_____

Weather Previous 72 Hours:

_____

VISUAL ASSESSMENT OF OUTFALL DISCHARGE SAMPLES SHOULD BE RECORDED ON THE ATTACHED QUARTERLY VISUAL ASSESSMENT TABLE. ALL RECORDS ARE TO BE MAINTAINED AT THE AIRPORT MANAGER'S OFFICE.

QUARTERLY VISUAL ASSESSMENT SUMMARY:

_____
_____
_____
_____
_____
_____
_____
_____

Certification Statement (Refer to MSGP Subpart 11 Appendix B for Signatory Requirements)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date Signed: _____

STORMWATER POLLUTION PREVENTION PLAN Cape
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSCHUSETTS
QUARTERLY VISUAL ASSESSMENT REPORTING FORM

OUTFALL LOCATION	TIME:	COLOR:	ODOR:	CLARITY:	FLOATING SOLIDS:	SETTLED SOLIDS:	SUSPENDED SOLIDS:	FOAM:	OIL SHEEN:	OTHER INDICATORS
Outfall A										
Outfall B										
Outfall C										
Outfall D										
Outfall E										
Outfall F										
Outfall H										
Outfall J										
Outfall J-A										

ALL QUARTERLY VISUAL ASSESSMENT RECORDS ARE TO BE MAINTAINED AT THE AIRPORT MANAGER'S OFFICE.

APPENDIX H

NPDES 3 - INDICATOR MONITORING REPORT FORM

MSGP Indicator Monitoring Report Form

Name of Facility:	Cape Cod Gateway Airport	NPDES Tracking No.	MAR053164

Sampling Location(s):

Person(s)/Title(s) collecting sample:

Person(s)/Title(s) examining sample:

Date & Time Sample Collected: (If sample is not taken within first 30 minutes, explain why.)

Nature of Discharge: ☐ Rainfall ☐ Snowmelt

Duration of Rainfall Event (hrs):	Rainfall amount for current event (in):	Time since the previous measurable storm event (days):

Previous Storm Ended > 72 hours Before Start of This Storm?	☐ Yes	☐ No* (If no, explain):

Indicator Monitoring Results

PAH Analytes	Units	Outfall								
		A	B	C	D	E	F	H	J	J-A
acenaphthene	-									
acenaphthylene										
anthracene										
benzo[a]anthracene										
benzo[b]fluoranthene										
benzo[k]fluoranthene										
benzo[a]pyrene										

benzo[g,h,i]perylene										
chrysene										
dibenz[a,h]anthracene										
fluoranthene										
fluorene										
indeno[1,2,3-c,d]pyrene										
naphthalene										
phenanthrene										
pyrene										

Include any additional comments, descriptions of pictures taken, and any corrective actions necessary below (attach additional sheets as necessary). If applicable, describe why it was not possible to take samples within the first 30 minutes of stormwater discharge. If applicable, describe any deviations to the monitoring schedule due to freezing conditions.

Certification Statement (Refer to MSGP Subsection 11 Appendix B for Signatory Requirements)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name:	B. Title:
C. Signature:	D. Date Signed:

Appendix F

JetBlue E190 Letter

27-01 Queens Plaza North
Long Island City, NY 11101
T: 1-800-JETBLUE
jetblue.com

May 2, 2023

To Whom It May Concern,

Subject: JetBlue E190 Retirement

This is letter is meant to reiterate JetBlue's current plan to retire its fleet of 60 E190s by 2026. In 2018, we announced our initial order of 60 A220s and the option for 60 additional aircraft. We converted 10 of 60 options to firm orders in 2019 and 30 additional options in 2022. With these transactions combined, we have 100 firm orders for A220s, all of which are expected to deliver by the end of 2026.

Our 2022 transaction with Airbus enabled the accelerated retirement of the Embraer E190 fleet, of which, we have already retired 12 aircraft. We will continue to steadily wind down the E190 fleet with the last aircraft exiting in 2026.

JetBlue's A220 fleet is outfitted with 140 seats compared with 100 on the E190s that these aircraft are replacing. This 40% jump in seat count allows JetBlue to keep costs low while continuing to grow service in the cities that we serve.

We are excited for the many Customer and economic benefits that this fleet transition enables over the next few years.

Sincerely,

Patrick Staudt

Patrick Staudt

Manager Fleet Strategy & Analysis
JetBlue Airways Corporation
27-01 Queens Plaza North
Long Island City, NY 11101

Appendix G

Upper Gate Pond Permanent Solutions Statement with No Conditions

PERMANENT SOLUTION STATEMENT WITH NO CONDITIONS

Cape Cod Gateway Airport
Hyannis, Massachusetts

RTN 4-28577

November 2023

Prepared for:
Cape Cod Gateway Airport
480 Barnstable Road Hyannis,
MA 02840

Prepared by:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563

PERMANENT SOLUTION STATEMENT WITH NO CONDITIONS
UPPER GATE AND LEWIS PONDS
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS
RELEASE TRACKING NUMBER 4-28577

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PERMINANT SOLUTION STATEMENT WITH NO CONDITIONS
CAPE COD GATEWAY AIRPORT
HYANNIS, MASSACHUSETTS
RELEASE TRACKING NUMBER 4-28577

1.0 INTRODUCTION

The Horsley Witten Group, Inc. (HW) has prepared this Permanent Solution Statement with No Conditions (PSS-NC) on behalf of the Responsible Party (RP), the Cape Cod Gateway Airport (the "Airport") for its property located at 480 Barnstable Road, Hyannis, Massachusetts. For the purpose of this report, the term "Airport" specifically refers to the Cape Cod Gateway Airport property located at 480 Barnstable Road and the term "Disposal Site" refers to the area impacted by oil and/or hazardous material (OHM) subject to Release Tracking Number (RTN) 4-28577. A Site Locus Map and the Estimated Disposal Site Boundary Map are provided as Figures 1 and 2, respectively.

This PSS-NC focuses on polycyclic aromatic hydrocarbons (PAHs) and lead that were discovered in sediments within Upper Gate Pond and Lewis Pond (the "Ponds", Figure 2). The Ponds are both fresh water and are located on the northern portion of the Airport property. The Airport discharges stormwater into the Ponds under an Environmental Protection Agency Multi-Sector General Permit MAR053164 (the "EPA MSGP"). Prior to discharge in the Ponds, stormwater is treated by Vortechs® hydrodynamic separators as indicated on Figure 3. Calculated total suspended solid (TSS) removal rates for these water quality units range from 81% to 87% with total petroleum hydrocarbon (TPH) removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the Ponds receives pretreatment.

The sediments in the Ponds were initialed sampled by HW in 1997 as part of the North Ramp Phase II Comprehensive Site Assessment (the "Phase II") relating to the investigation and remediation of a hydrocarbon and chlorinated solvent plume at Airport (RTN 4-823). As documented in the Phase II, additional sediment sampling and preparation of a risk characterization was postponed pending updated guidance from the Massachusetts Department of Environmental Protection (MassDEP). At the time of the Phase II, there were questions about whether or not the sediment contamination was associated with the North Ramp petroleum releases or related to typical contaminants found in stormwater runoff from impervious areas that are impacted by aircraft and motor vehicle usage.

Additional sediment samples (Figure 4 and 5) were collected from the Ponds in 2001 (sample locations unknown) 2004, 2005 and 2011. Due to elevated laboratory reporting limits (Tables 1 and 2), it was difficult to determine if the PAHs in sediment were consistent with petroleum residues that are incidental to the normal operation of a vehicle and atmospheric deposition of engine emissions. Samples were also collected from Mary Dunn Pond (Figure 6) to document lead and PAH concentrations (Table 3) in a non-stormwater receiving pond that was located in proximity to Upper Gate Pond and Lewis Pond.

The remediation of the North Ramp hydrocarbon and chlorinated solvent plume was completed in July 2020. At that time, MassDEP agreed to separate the remaining assessment associated with the Ponds and assigned a new RTN (4-28577). Additional sediment samples were collected from the Ponds, an airport outfall on the east ramp (Outfall J), an infiltration basin at Outfall J (Outfall Plaza), and Mary Dunn Pond in 2021 and 2022 as indicated on Figures 3 through 6.

An evaluation of the ratios of fluoranthene to pyrene and phenanthrene to anthracene was conducted to determine if these ratios were consistent with literature values for engine exhaust particles, diesel fuel, or urban runoff in sediment. As indicated on Tables 1 through 3, the samples were most consistent with exhaust particles which would be expected in sediments within stormwater ponds that collect stormwater from runways and parking lot areas. Additional details on ratios for PAH source identification are included on Table 1 of the document titled *Ecological Risk Assessment of Polycyclic Aromatic Hydrocarbons in Sediment: Identifying Sources and Ecological Hazards,* prepared by Jerry M. Neff, Scott A. Stout, and Donald Gunster, dated May 20, 2004. A copy of this document including Table 1 is included in Appendix A. The elevated lead in the sediments can be attributed to use of leaded aviation gasoline or from historic leaded gasoline.

As such, the PAHs and lead detected in the sediments are consistent with engine emissions from vehicles or aircraft that enter the Ponds or infiltration basins from the Airport's stormwater management system. Runoff from a majority of the runways, taxiways, and ramp areas at the Airport is collected and discharged through three outfalls in Upper Gate Pond (Figure 3) and one outfall in Lewis Pond (Figure 3). Stormwater from the Kmart Plaza Area, Barnstable Road, and Airport Road is discharged to an infiltration basin through Outfall F (Figure 3) and stormwater from the East Ramp is discharged to Outfall J.

The PAHs and lead detected in the sediments at the Airport are consistent with incidental petroleum residuals (including the use of leaded gasoline) and/or engine emissions from vehicles or aircraft that enter the Ponds, outfalls, and infiltration basins from the Airport's stormwater management system. Pursuant to 310 CMR 40.0006, petroleum residues that are incidental to the normal operation of a vehicle and atmospheric deposition of engine emissions are ubiquitous and consistently present in the environment and are considered Anthropogenic Background.

Additionally, pursuant to 310 CMR 40.0317 (3) "releases of OHM that are discharged or emitted from an outfall, stack or other point source, or as fugitive emissions, any of which are regulated under and have received a valid permit, license, or approval, or which are operating under a valid registration, order or guideline issued under a federal or state statute or regulation, unless the release:

- exceeds the amount allowed by the permit, license, approval, registration, order or guideline; and
- represents an Imminent Hazard to health, safety, public welfare or the environment".

The Airports MSGP does not include any criteria or benchmark values for lead or PAHs and the concentrations of lead and PAHs detected in sediment do not pose an imminent hazard pursuant to 310 CMR 40.0950. As such, the normal operation of the Airport's Stormwater system which may include stormwater discharges containing Anthropogenic Background levels of PAHs and lead is not regulated under the MCP. Therefore, this PSS-NC report is being submitted to document the information that confirms the release is related to permitted stormwater runoff consistent with Anthropogenic Background and therefore no further action under the MCP is required.

A Permanent and Temporary Solution Statement Form (BWSC104) is being submitted to the MassDEP concurrently with the submittal of this report.

Details concerning the PSS-NC are set forth below.

2.0 BACKGROUND

The Airport is located in Hyannis, Massachusetts, and provides scheduled airline service and general aviation services and other aviation related activities. The Airport is currently owned by the Town of Barnstable and is operated through the Cape Cod Gateway Airport Commission. The Airport began as a private airport consisting of a single grass runway before being given to the Town of Barnstable in the 1930's. During the 1940's, the U.S. Navy used the Airport and expanded the airfield to include three runways. In 1946, the Airport was returned to use as a two-runway municipal airport (each runway has a designation at each end, being 15-33 and 6-24).

The Airport is comprised of approximately 645 acres of land, with approximately 140 acres that are impervious (e.g., paved areas such as parking lots, runways, concrete walkways, and building rooftops). The Airport's structures include the main terminal and the Air Traffic Control Tower (ATCT), which are located south of the runways and taxiways, as well as several hangars used for general aviation services. The terminal includes office space for Airport employees, ticketing counters for airlines, service counters for auto rental agencies, a restaurant, a retail/art store, space for the TSA, and a general lobby and passenger queuing area. The Airport is located in an area of Hyannis zoned for Business and Industrial uses.

The general aviation facilities are managed primarily by private companies who lease portions of the Airport property. Daily operations typically include a variety of activities from private aircraft flights and charter services, flight school operations, aircraft maintenance and storage, refueling of aircraft, and other aviation related actions. The Airport provides vehicle parking at a main lot located directly in front of the terminal as well as at other locations proximate to hangars across the airport. The Airport is currently served by electric power, telephone, natural gas, municipal sewer, and a few individual septic systems for hangars on the north end of the East Ramp area.

The stormwater from most of the 142-acres of impervious areas at the Airport is collected and sent through a series of drainpipes that flow towards either Upper Gate or Lewis Pond (See Airport Drainage Map, Figure 3). The pipes that channel flow to the Ponds are open jointed pipes, meaning that some of the stormwater, especially from smaller rain events, infiltrates into the ground before it flows all the way to the outfalls at the Ponds. There are four outfalls to the Ponds; three that discharge to Upper Gate Pond and one that discharges to Lewis Pond. These outfalls have been in use for over 40 years, and possibly since the runways were reconfigured in 1946 as mentioned above.

Since 2011, 100% of the stormwater discharging to the ponds has been treated by Vortechs® hydrodynamic separators. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%.

Release History

The sediments in the Ponds were originally tested by HW in 1997 as part of the Phase II for the North Ramp hydrocarbon and solvent plume (RTN 4-823). There was concern at that time that activities associated with that release may have contributed contamination to the stormwater management facilities at the Airport and that the contamination may have migrated to the two Ponds.

Since that time, further evaluations of the releases associated with the North Ramp have been conducted and it was determined there was limited opportunity for the sources of the releases on the North Ramp to enter the stormwater facilities and discharge to the Ponds. The primary cause of the release at the North Ramp was from floor drains that discharged to leach pits either directly or through an oil/water separator connected to a leaching pit. These releases entered the underlying groundwater and did not migrate towards the Ponds as indicated on Figure 7. Additionally, as indicated on Tables 1 through 3, the ratio of fluoranthene to pyrene and phenanthrene to anthracene for the sediment samples collected in 2021 and 2022 were most consistent with diesel exhaust particles which would be expected in sediments within stormwater ponds that collect stormwater from runways and parking lot areas. PAH ratios are a forensic tool that are routinely utilized to determine potential sources of PAHs in the environment. Forensic analysis could not be conducted on previous samples collected due to elevated laboratory reporting limits. Refer to Appendix A for additional details of forensic rations used in sediment evaluations. It should be noted that due to elevated reporting limits in the PAH data collected prior to 2021, a forensic analysis could not be completed on historic analytical data.

The Airport and its various buildings, terminal runways, taxiways, and hangars include connections to stormwater facilities. The Airport has an overall Stormwater Pollution Prevention Plan (SWPPP) and associated drainage utility map that is updated regularly (Figure 3). Stormwater runoff either infiltrates directly into the sandy soils or is conveyed to other infiltration treatment units (e.g., Vortechs, raingardens, naturalized depressions, leaching catch basins) prior to discharge to the ground or into the Ponds. The SWPPP was prepared in

accordance with the requirements of the EPAs NPDES and annual stormwater reports are submitted to the EPA. As changes to runways, taxiways, and other infrastructure are made, the SWPPP is updated, reviewed, and approved as necessary.

As discussed above, both Upper Gate and Lewis Ponds receive stormwater during larger rain events from the runways, taxiways, and ramp areas at the Airport. Stormwater from the Kmart Plaza Area, Barnstable Road, and Airport Road is discharged to an infiltration basin through Outfall F. Stormwater from the East Ramp is discharged to Lewis Pond through Outfall J. Figure 3 provides an overview of the drainage areas that contribute to the Ponds. Both aircraft and vehicles operate in the paved areas that drain to the Ponds. Therefore, the runoff from these areas likely includes hydrocarbons and lead related to the incidental operation of vehicles and aircraft. It should be noted that aviation gas contains lead.

3.0 CONTENT OF THE PERMANENT SOLUTION

Pursuant to 310 CMR 40.1056(1), a Permanent Solution Statement shall include the following information.

3.1 Site Name, Location, and RTN

Pursuant to 310 CMR 40.1056(1)(a), the Site name, location and RTN are set forth below.

Cape Cod Gateway Airport
Upper Gate and Lewis Ponds
480 Barnstable Road
Hyannis, Massachusetts, 02601

Primary RTN: 4-28577

Secondary RTNs: None

3.2 Type of Permanent Solution

Pursuant to 310 CMR 40.1056(1)(b), the type of Permanent Solution is set forth below.

The Site has a achieved a PSS-NC Pursuant to 310 CMR 40.1041(1) in connection with RTN 4-28577. There are no secondary RTNs associated with the release.

3.3 Method of Risk Characterization

Pursuant to 310 CMR 40.1056(1)(c), the method of risk characterization is set forth below.

As set forth above, the detection of PAHs and lead in Ponds outfalls, and infiltration basin sediment are related to petroleum residuals that are incidental to the normal operation of

aircraft and other vehicles. As such, the concentration of PAHs and lead are consistent with Anthropogenic Background and a condition of No Significant Risk (NSR) exists. The MCP defines background "as those levels of oil and hazardous material that would exist in the absence of the disposal site of concern, including both Natural Background and Anthropogenic Background."

Pursuant to 310 CMR 40.1056(1)(c), completion of a Risk Characterization pursuant to 310 CMR 40.0900 is not required where concentrations of OHM are consistent with or are at background levels. Therefore, no risk characterization was completed in connection with RTN 4-28577.

It should be noted that an Imminent Hazard Evaluation was prepared to satisfy the requirements of 310 CMR 40.0317 (3). The Imminent Hazard Evaluation was prepared consistent with 310 CMR 40.0950. The highest detection of PAHs and lead as indicated on Tables 1 through 3 was used for the evaluation. As indicated on the Imminent Hazard Sort Form included in Appendix B, the Hazard Index is less than 1 and excess lifetime cancer risk is less than 1 in 100,000 and no stressed biota, fish fills, abiotic conditions or other conditions which produce an immediate or acute impact to freshwater fish were identified. As such, an Imminent Hazard to Human Health or the environment does not exist based on the levels of PAHs and lead detected in the sediment.

3.4 Relationship of the Permanent Solution to Other Permanent or Temporary Solution Statements

Pursuant to 310 CMR 40.1056(1)(d), the relationship of the Permanent Solution Statement to any other Permanent or Temporary Solution Statements that have been filed for the Disposal Site, if applicable, together with a statement as to whether any additional response actions are needed for any other portions of the disposal site are set forth below.

This PSS-NC is being submitted in connection with the release associated with RTN 4-28577 and is not related to any other Permanent or Temporary Solution Statements submitted to the MassDEP. No additional response actions are necessary in connection with the release.

3.5 Implementation of an Activity and Use Limitation

Pursuant to 310 CMR 40.1056(1)(e), an indication as to whether the Permanent Solution includes the implementation of an Activity and Use Limitation (AUL), and if so, the type of AUL implemented at the Disposal Site is set forth below.

A level of NSR exists with respect to the release associated with RTN 4-28577 and an AUL is not required to maintain a level of NSR.

3.6 Assumptions about the Current and Future Site Activities

Pursuant to 310 CMR 40.1056(1)(f), an indication as to whether the Permanent Solution is based upon assumptions about the current or future activities, uses or conditions that do not require an AUL pursuant to 310 CMR 40.1013 and a description of those assumptions is set forth below.

The PSS-NC is based upon assumptions that the concentration of OHM at the Disposal Site is consistent with Anthropogenic Background Levels of PAHs and lead. The levels are related to petroleum residuals that are incidental to the normal operation of aircraft and other vehicles in the areas that contribute stormwater runoff that eventually enters the Ponds, outfalls and infiltration basins.

3.7 Active Exposure Pathway Mitigation Measures

Pursuant to 310 CMR 40.1056(1)(g), an indication as to whether the Permanent Solution is based upon the effective operation of one or more Active Exposure Pathway Mitigation Measures pursuant to 310 CMR 40.1025 is set forth below.

The PSS-NC is not based upon the effective operation of one or more Active Exposure Pathway Mitigation Measures, pursuant to 310 CMR 40.1025.

3.8 Licensed Site Professional Opinion

Pursuant to 310 CMR 40.1056(1)(h), an Opinion from an LSP as to whether the requirements of the applicable category of Permanent Solution specified in 310 CMR 40.1000 have been met is set forth below.

As set forth in Section 11.0, the Disposal Site conditions are consistent with the criteria for a PSS-NC, pursuant to 310 CMR 40.1041(1). The certification of the Permanent Solution Statement Category and all documents submitted with the Permanent Solution Statement, as required by 310 CMR 40.0009, is set forth in Section E and G of the *Permanent and Temporary Solution Statement* transmittal form (BWSC 104) submitted concurrently with this report.

3.9 Certification of the Permanent Solution Statement

Pursuant to 310 CMR 40.1056(1)(i), the certification of the Permanent Solution Statement and all documents submitted with the Permanent Solution Statement, as required by 310 CMR 40.0009.

The certification of the PSS-NC is set forth in Section G of the *Permanent and Temporary Solution Statement (BWSC 104)* transmittal form submitted concurrently with this report.

3.10 Evaluation of the Upper Concentration Limits for Permanent Solutions

Pursuant to 310 CMR 40.1056(1)(j), an indication as to whether oil and/or hazardous materials (OHM) concentrations exceed one or more applicable Upper Concentration Limits ("UCLs") in soil or groundwater, as described at 310 CMR 40.0996, is set forth below.

As indicated on Tables 1 through 3, no OHM was detected above the UCLs at the Disposal Site. Additionally, conditions at the Disposal Site are consistent with Anthropogenic Background and a level of NSR exists.

3.11 Compendium of Analytical Data

Pursuant to 310 CMR 40.1056(1)(k), an indication as to whether the analytical data used to support the Permanent Solution was generated pursuant to MassDEP's Compendium of Analytical Methods ("CAM") is set forth below.

The analytical data generated between August 2021 and January 2022 and used to support the PSS-NC was generated consistent with CAM protocols. It is unclear if the analytical data collected prior was generated consistent with CAM protocols.

3.12 Site Map

Pursuant to 310 CMR 40.1056(2)(a), a Site Map and Disposal Site Map are required.

A Disposal Site Map and Site Maps are provided as Figure 2 and Figures 3 through 6, respectively.

3.13 Conceptual Site Model

Pursuant to 310 CMR 40.1056(2)(b), a succinct Conceptual Site Model is required.

A Conceptual Site Model is provided in Section 7.0.

3.14 Source Control and/or Elimination

Pursuant to 310 CMR 40.1056(2)(c), a demonstration that all sources of OHM impacts at the Site have been eliminated or controlled, as specified in 310 CMR 40.1003(5)(a) and (b).

As indicated in Section 2.0 and 3.3, Site conditions are consistent with Anthropogenic Background and a level of NSR exists.

3.15 Control of Subsurface Migration of OHM

Pursuant to 310 CMR 40.1056(2)(d), a demonstration that response actions have been taken to adequately assess and, if necessary, control the subsurface migration of OHM remaining at the Disposal Site, as specified in 310 CMR 40.1003(6)(a).

As indicated in Section 2.0 and 3.3, Site conditions are consistent with Anthropogenic Background and a level of NSR exists.

3.16 Assessment and Control of NAPL

Pursuant to 310 CMR 40.1056(2)(e), where non-aqueous phase liquid ("NAPL") is or has been present, a demonstration that response actions have been taken to adequately assess and if necessary, control NAPL mobility and meet the requirements of 310 CMR 40.1003(7)(a) is necessary.

No NAPL was encountered at the Disposal Site.

3.17 Documentation of Achieving a Level of NSR

Pursuant to 310 CMR 40.1056(2)(f), information supporting the conclusion that a level of NSR has been achieved or exists is required.

Details documenting a level of NSR is set forth above in Section 3.3.

3.18 Evaluation of Background Conditions

Pursuant to 310 CMR 40.1056(2)(g), information documenting the extent to which levels of OHM in the environment have been reduced to background, and/or the results of the feasibility evaluation conducted pursuant to 310 CMR 40.0860 demonstrating that the achievement of Background is not feasible is required.

As indicated in Section 2.0 and 3.3, Site conditions are consistent with Anthropogenic Background and a level of NSR exists. As such, an evaluation of achieving background levels is not required since the Site conditions are consistent with background.

3.19 Activity and Use Limitations Opinion and Transmittal Form

Pursuant to 310 CMR 40.1056(2)(h), a copy of any and all AULs which have been implemented under 310 CMR 40.1070 must be included in the Permanent Solution Statement.

No AULs are required to support the conclusions of this PSS-NC.

3.20 Feasibility of Achieving Background for UCL Exceedances

Pursuant to 310 CMR 40.1056(2)(i), for Permanent Solutions with Conditions where concentrations in soil exceed UCLs at a depth greater than fifteen feet from the ground surface or in an area beneath an engineered barrier, a feasibility of achieving background evaluation pursuant to 310 CMR 40.0860, is required.

As indicated on Tables 1 through 3, no samples exceeded UCLs. In addition, as indicated in Section 2.0 and 3.3, Disposal Site conditions are consistent with Anthropogenic Background and a level of NSR exists. As such, a background evaluation is not necessary.

3.21 Summary of Conditions Associated with the Permanent Solution

Pursuant to 310 CMR 40.1056(2)(j), for a Permanent Solution with Conditions based upon assumptions about the current or future Disposal Site activities, uses or conditions that do not require an AUL pursuant to 310 CMR 40.1013, a summary of the assumptions and conditions is required.

There are no conditions associated with the Permanent Solution being submitted.

3.22 Data Usability Assessment and Representativeness Evaluation

Pursuant to 310 CMR 40.1056(2)(k), a Data Usability Assessment documenting that the data relied upon is scientifically valid and defensible, and of a sufficient level of precision, accuracy, and completeness to support the Permanent Solution, and a Data Representativeness Evaluation, documenting the adequacy of the spatial and temporal data sets to support the Permanent Solution.

Details concerning data usability and representative analysis are set in Sections 10.1 and 10.2, respectively.

3.23 Ongoing Operation, Maintenance, and/or Monitoring

Pursuant to 310 CMR 40.1056(2)(l), a description of any operation, maintenance, and/or monitoring that will be required to confirm and/or maintain those conditions at the Disposal Site upon which the Permanent Solution is based is set forth below.

No operation, maintenance and/or monitoring activities are necessary to confirm or maintain the conditions at the Disposal Site consistent with the PSS-NC.

4.0 SUMMARY OF SITE AND RELEASE CONDITIONS

PAHs and lead that were initially discovered in sediments within the Ponds in 1997 as part of the North Ramp Phase II Comprehensive Site Assessment relating to the investigation and remediation of a hydrocarbon and chlorinated solvent plume at Airport (RTN 4-823). As documented in the Phase II, additional sediment sampling and preparation of a risk characterization was postponed pending updated guidance from the MassDEP. At the time of the Phase II, there were questions about whether the sediment contamination was associated with the North Ramp petroleum releases or related to typical contaminants found in stormwater runoff from impervious areas that are impacted by aircraft and motor vehicle usage.

The Ponds are both fresh water and are located on the northern portion of the Airport property. The Airport discharges stormwater into the Ponds under an EPA MSGP. Prior to discharge in the Ponds, stormwater is treated by Vortechs® hydrodynamic separators as indicated on Figure 3. As indicated above, a forensic evaluation of the data verified that the PAHs detected in the sediments are consistent with engine emissions from vehicles or aircraft that enter the Ponds, outfalls, and infiltration basins from the Airport's stormwater management system and the elevated lead can be attributed to use of leaded aviation gasoline and/or historic use of leaded gasoline in vehicles.

As set forth in 310 CMR 40.0006, petroleum residues that are incidental to the normal operation of a vehicle and atmospheric deposition of engine emissions are ubiquitous and consistently present in the environment and are considered Anthropogenic Background.

4.1 Surrounding Receptors

The Disposal Site is located within a secured fenced area at the Cape Cod Gateway Airport. Potential human receptors include site workers, utility workers and construction workers. Based on the MassDEP Priority Resource Map (Figures 9 and 10), the Disposal Site is located within a MassDEP designated zone of contribution (Zone II) to Public Water Supply (PWS) wells and within a Medium-Yield Sole Source Aquifer. There is a Natural Heritage and Endangered Species Program ("NHESP") Priority Habitat or Rare Species Habitats and protected open space located within 500 feet of the Disposal Site. It should be noted that the Site utilizes municipal water and groundwater samples collected from monitoring wells located in proximity to the Ponds (Figure 8) did not indicate exceedances of the applicable Method 1 groundwater standards as indicated on Table 4.

5.0 SUMMARY OF RESPONSE ACTIONS

A description of the work completed including a subsurface investigation is set forth below.

A number of investigations have been conducted to evaluate the presence of OHM in the sediments found on the bottom of the Ponds after the collection of initial sediment samples by HW in 1997. The field work conducted to date by HW and others after 1997 includes the following:

- Collection of a sediment sample from Lewis Pond (LP-EP1), Upper Gate Pond (HYAS2), and Mary Dunn Pond (HYAS3) in 2001 for PAHs and Lead. The location of these samples is unknown.

- Collection of a sediment sample from Lewis Pond (HYAS1), and three from Upper Gate Pond in 2004 for PAHs and Lead.

- Collection of four sediment samples from Lewis Pond, five from Upper Gate Pond, and two from Mary Dunn Pond in 2005 for PAHs and Lead.

- Collection of ten sediment samples from Lewis Pond, 11 from Upper Gate Pond, and ten from Mary Dunn Pond in 2011 for PAHs and Lead.

- Collection of 21 groundwater samples in 2011 from monitoring wells H-401S, HW-401D, HW-402, HW-403 and HW-404. In general, each well was sampled quarterly during 2011.

- Collection of ten sediment samples from Lewis Pond, three from Upper Gate Pond, and one from Mary Dunn Pond in 2021 for PAHs and Lead.

- Collection of a sediment sample from Outfall J and Outfall Plaza (Outfall F) in 2022 for PAHs and Lead.

Refer to Figures 3 through 6 and Figure 8 for sampling locations and Tables 1 through 5 for tabulated analytical results. Laboratory data packages for the 2021 and 2022 sampling events are included in Appendix C.

6.0 SOURCE CONTROL AND/OR ELIMATION

As indicated above, the source of the PAHs and lead in sediment is related to Anthropogenic Background conditions associated with the operation of a stormwater discharge outfall permitted by the EPA under a MSGP. Prior to discharge in the Ponds, stormwater is treated by Vortechs® hydrodynamic separators as indicated on Figure 3. The calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the Ponds receives pretreatment.

7.0 CONCEPTUAL SITE MODEL

The Ponds are both fresh water and are located on the northern portion of the Airport property. The Airport discharges stormwater into the Ponds under an EPA MSGP. Prior to discharge in the Ponds, stormwater is treated by Vortechs® hydrodynamic separators as indicated on Figure 3. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%. Since the installation of the Vortechs® units in 2011, 100% of stormwater discharged to the Ponds receives pretreatment.

The sediments in the Ponds were initialed sampled by HW in 1997 as part of the North Ramp Phase II Comprehensive Site Assessment relating to the investigation and remediation of a hydrocarbon and chlorinated solvent plume at Airport (RTN 4-823). As documented in this report, additional sediment sampling and preparation of a risk characterization was postponed pending updated guidance from the MassDEP. At the time of the Phase II, there were questions about whether or not the sediment contamination was associated with the North

Ramp petroleum releases or related to typical contaminants found in stormwater runoff from impervious areas that are impacted by aircraft and motor vehicle usage. Between 2001 and 2022, 61 sediment samples and 21 groundwater samples were collected to determine if the detections of lead and PAHs in the Pond were the result of the release at the North Ramp or, if they were consistent with Anthropogenic Background. Due to elevated PAH reporting limits in the data collected prior to 2021, forensic analysis of PAH ratios was not possible.

The remediation of the North Ramp hydrocarbon and chlorinated solvent plume was completed in July 2020. At that time, MassDEP agreed to separate the remaining assessment associated with the Ponds and assigned a new RTN (4-28577). As indicated above, further evaluations of the releases associated with the North Ramp have been conducted and it was determined there was limited opportunity for the sources of the releases on the North Ramp to enter the stormwater facilities and discharge to the Ponds. The primary cause of the release at the North Ramp was from floor drains that discharged to leach pits either directly or through an oil/water separator connected to a leaching pit. These releases entered the underlying groundwater and did not migrate towards the Ponds as indicated on Figure 7

Changes in laboratory instrumentation and methods has allowed for lower reporting limits and a forensic evaluation of the sediment data was conducted in 2021 and 2022. The evaluation focused on the ratios of fluoranthene to pyrene and phenanthrene to anthracene to determine if these ratios were consistent with literature values for vehicle exhaust particles, diesel fuel, or urban runoff in sediment. As indicated on Tables 1 through 3, the samples were most consistent with diesel exhaust particles which would be expected in sediments within stormwater ponds that collect stormwater from runways and parking lot areas. Additional details on ratios for PAH source identification are included in Appendix A and can help to identify multiple sources including:

Gasoline Auto Exhaust soot	Diesel Engine Soot	Diesel Exhaust Particles
Highway Dust	Urban Runoff	Diesel Fuel
Crude Oils	Residential Fuel Oil	Coal

The PAHs and lead detected in the sediments are consistent with incidental petroleum residuals (including the use of leaded gasoline) and/or engine emissions from vehicles or aircraft that enter the Ponds, outfalls or drainage basins from the Airport's stormwater management system. As set forth in 310 CMR 40.0006, petroleum residues that are incidental to the normal operation of a vehicle and atmospheric deposition of engine emissions are ubiquitous and consistently present in the environment and are considered Anthropogenic Background.

8.0 RISK CHARACTERIZATION

Pursuant to 310 CMR 40.1056(1)(c), completion of a Risk Characterization pursuant to 310 CMR 40.0900 is not required where concentrations of OHM are consistent with or are at background levels. Therefore, no risk characterization was completed in connection with RTN 4-28577.

It should be noted that an Imminent Hazard Evaluation was prepared to satisfy the requirements of 310 CMR 40.0317 (3). The Imminent Hazard Evaluation was prepared consistent with 310 CMR 40.0950. The highest detection of PAHs and Lead as indicated on Tables 1 through 3 was used for the evaluation. As indicated on the Imminent Hazard Sort Form included in Appendix B, the Hazard Index is less than 1 and the excess lifetime cancer risk is less than 1 in 100,000. No stressed biota, fish fills, abiotic conditions or other conditions which produce an immediate or acute impact to freshwater fish were identified. As such, an Imminent Hazard to Human Health or the environment does not exist based on the levels of PAHs and lead detected in the sediment.

9.0 MANAGEMENT OF REMEDIAL WASTE

No remediation waste was generated during response actions.

10.0 DATA QUALITY EVALUATION

Pursuant to 310 CMR 40.1056 (2)(k), a Data Usability Assessment documenting that the data relied upon is scientifically valid and defensible, and is of a sufficient level of precision, accuracy, and completeness to support the Permanent Solution and a Data Representativeness Evaluation, documenting the adequacy of the spatial and temporal data sets to support the Permanent Solution is set forth below.

10.1 Data Usability Assessment

According to MassDEP Policy #WSC-10-320 *Compendium of Analytical Methods* (CAM), all response action submittals are required to provide details on any known conditions of findings which may affect the validity of analytical data, including unsatisfactory analytical results received on quality assurance / quality control blanks, duplicates, surrogates, or spiked samples. In accordance with Table 2 of WSC-07-350, CAM compliant data is defined as data with "Presumptive Certainty" when the analytical results are determined using an "MCP Analytical Method" that complies with method-specific quality control (QC) requirements, are reported with a narration of method-specific deficiencies, as necessary, and are reported with the CAM required deliverables specified in the CAM for MCP analytical data. Samples collected in 2021 and 2022 that are being relied upon to make the determination of NSR were analyzed by a MassDEP certified laboratory and in accordance with CAM protocols, where applicable. It is unclear if the samples collected prior to 2021 were analyzed using CAM methods.

Laboratory analytical data has been evaluated and determined to be usable for the purpose of supporting this Permanent Solution Statement. No limitations and/or significant qualifications on the use of the laboratory data used to support this Permanent Solution Statement exist. As indicated above, the analytical data generated between 2021 and 2022 and used to support the PSS-NC was generated consistent with CAM protocols. It is unclear if the historical analytical data (2011 and prior) was generated consistent with CAM protocols. The data collected

between 2021 and 2022 was used to determine that the release conditions were consist with Anthropogenetic Background and are discussed in additional detail below.

10.1.1 Field Data Usability Assessment

Table 3 of MassDEP Policy #WSC-07-350 provides the following summary of field quality control elements to be considered when evaluating the quality of analytical results:

- Sample Procedure
- Sample Containers and Sample Preservation
- Holding Time
- Matrix Spikes/Matrix Duplicates
- Equipment Bland/Trip Blanks

Samples were placed in the appropriate laboratory-provided, pre-cleaned and, as appropriate, pre-preserved containers. Sample sizes were sufficient, holding times were achieved and sample collection procedure verified that field quality control ("QC") requirements were met. The samples were maintained on ice and transported to the laboratory under chain-of custody protocol.

As indicated in Table VII A-4 of MassDEP Policy #WSC-CAM, field duplicates, and matrix spikes/matrix spike duplicates are only mandatory for drinking water samples. Drinking water samples are defined as samples collected from a public water supply or private water supply well.

10.1.2 Rejection of Analytical Data as the Result of Gross Failure

None of the analytical data meets the definition of rejected data as defined in Appendix IV of MassDEP Policy #WSC-07-350.

10.1.3 Data Representativeness and Usability Conclusion

Sediment samples were collected throughout the investigation of the Disposal Site. The sampling locations were sufficient to delineate the boundaries of the Disposal Site, identify background conditions, calculate EPCs, identify any potential Hot Spots, identify potential exposure pathways and receptors, and demonstrate source elimination or control. No limitations and/or significant qualifications on the use of the laboratory data used to support this Permanent Solution Statement were identified. All laboratory method detection limits were sufficient in determining Anthropogenetic Background.

Laboratory analytical data collected throughout the investigation and remediation of the Disposal Site has been evaluated and determined to be usable for the purpose of supporting this Permanent Solution Statement.

10.2 Representativeness Evaluation

According to Section 6.0 of MassDEP Policy #WSC-07-350, the Representativeness Evaluation determines whether the data set sufficiently characterizes conditions at the Disposal Site and supports a Conceptual Site Model. The Representativeness Evaluation determined whether there is enough information from the right locations, both spatially and temporally, to support the Permanent Solution, and should:

- Demonstrate the adequacy of cumulative data to characterize the nature and extent of contamination at the Disposal Site, the risk to health, safety, public welfare and the environment and the elimination/control of contaminant source areas; and Identify inconsistent and incomplete information and sources of uncertainty, and justify why such inconsistent information, data gaps, or uncertainty are not sufficient to undermine the Permanent Solution opinion.

10.2.1 Use of Field Screening Data

Field screening data was not necessary for this investigation. Sediment sample locations were determined based on stormwater discharge locations and were collected spatially to determine the extent of impact. Sediment samples were submitted to a Massachusetts certified laboratory using CAM methods for analysis of contaminants of concern.

10.2.2 Sampling Rationale

The media and locations sampled during the investigation of the Disposal Site were appropriate to support the conclusions of the Permanent Solution and satisfy the requirements of Table 1 of WSC-07-350. Samples were collected from both sediment areas in the ponds impacted by stormwater run-off from paved and unpaved areas. The sampling locations were sufficient to delineate the boundaries of the Disposal Site, identify background conditions, calculate EPCs, identify any potential Hot Spots, identify potential exposure pathways and receptors, and demonstrate source elimination or control.

10.2.3 Number, Spatial Distribution, and Handling of Samples

More than 61 sediment samples and 21 groundwater samples were collected for laboratory analysis. The sampling targeted locations that received stormwater run-off from paved and unpaved areas. Field samples were collected in accordance with standardized and accepted protocols. The receiving laboratory reported that samples were received in acceptable condition, appropriately preserved, and that no holding times were exceeded.

10.2.4 Temporal Distribution of Samples

Based upon the release conditions at the Disposal Site, the temporal distribution of soil samples is suitable for providing representative data of the Disposal Site conditions.

10.2.5 Critical Samples

Consistent with WSC-07-350, a critical sample is a sample for which a usable result is necessary to support a conclusion that the response action objectives have been met (i.e., absent a usable result for such sample, it cannot otherwise be demonstrated that the objective has been achieved). No critical samples were identified or are necessary to support the Permanent Solution with No Conditions.

10.2.6 Completeness

Based on a review of the analytical data generated, verification that all surrogate recoveries were within the appropriate quality control limits, and that presumptive certainty has been achieved for all laboratory analytical data, the completeness of this project is 100 percent.

10.2.7 Inconsistency and Uncertainty

No inconsistent or uncertain information was identified or disregarded in reaching a conclusion that site investigation and remedial activities were sufficient to support a Permanent Solution with No Conditions for the Disposal Site.

10.2.8 Representativeness Summary

In summary, the field screening and analytical data collated at the Disposal Site are considered representative of Disposal Site conditions and are suitable for assessing risk in support of the PSS-NC.

11.0 EVALUATION OF THE PERMANENT SOLUTION CRITERIA

Pursuant to 310 CMR 40.1040(1), a Permanent Solutions shall apply where the following conditions exist.

(a) A level of No Significant Risk, as specified in 310 CMR 40.0900, exists or has been achieved.

As set forth in Section 3.3, a level of NSR has been achieved at the Disposal Site.

(b) All sources of OHM impacts have been eliminated or controlled, as specified in 310 CMR 40.1003(5)(a) and (b).

As indicated above, the OHM detected in sediment at the Airport is consist with Anthropogenic Background. Since 2011, 100% of the stormwater discharging to the ponds has been treated by Vortechs® hydrodynamic separators. Calculated TSS removal rates for these water quality units range from 81% to 87% with TPH removal at 67%.

(c) Control of plumes of dissolved OHM in groundwater and vapor-phase OHM in the vadose zone has been achieved as specified in 310 CMR 40.1003(6)(a).

As indicated above, groundwater has not been impacted by the release and conditions are consist with Anthropogenic Background.

(d) NAPL, if present, has been addressed as specified in 310 CMR 40.1003(6)(a).

NAPL has not been identified at the Disposal Site.

(e) All threats of release have been eliminated.

No threats of release, pursuant to 310 CMR 40.0006, have been identified within the Disposal Site boundary.

(f) The level of OHM concentrations in the environment have been reduced to as close to background levels as feasible, as specified at 310 CMR 40.1020.

As indicated above, the OHM detected in sediment at the Airport is consist with Anthropogenic Background.

Pursuant to 310 CMR 40.1041(1), a Permanent Solution with No Conditions shall apply where the following conditions exist.

(a) Disposal Sites or portions of a Disposal Site where the requirements of 310 CMR 40.1040(1) have been achieved;

As set forth above, the requirements of 310 CMR 40.1040(1) have been achieved within the Disposal Site, which is subject to the PSS-NC.

(b) Concentrations of OHM do not exceed an applicable UCL in soil or groundwater listed at 310 CMR 40.0996(6);

As set forth above, sediment and groundwater do not exceed UCLs, and OHM detections are consist with Anthropogenic Background conditions.

(c) Disposal Sites or portions of a disposal Site where a level of NSR exists and will be maintained for all current and foreseeable future use of the Site, without relying upon:

1. assumed limitations on current or future Site activities, uses or conditions, that require an Activity and Use Limitation, as specified in 310 CMR 40.1012(2); or

2. assumed limitations on current or future Site activities, uses or conditions, that do not require an Activity and Use Limitations pursuant to 310 CMR 40.1013; and

Pursuant to 310 CMR 40.1013(1)(d), the Permanent Solution does not require an AUL and no assumed limitations on current or future activities at the Disposal Site have been made.

(d) Sites where response actions have eliminated all threats of release and no release of OHM to the environment has occurred.

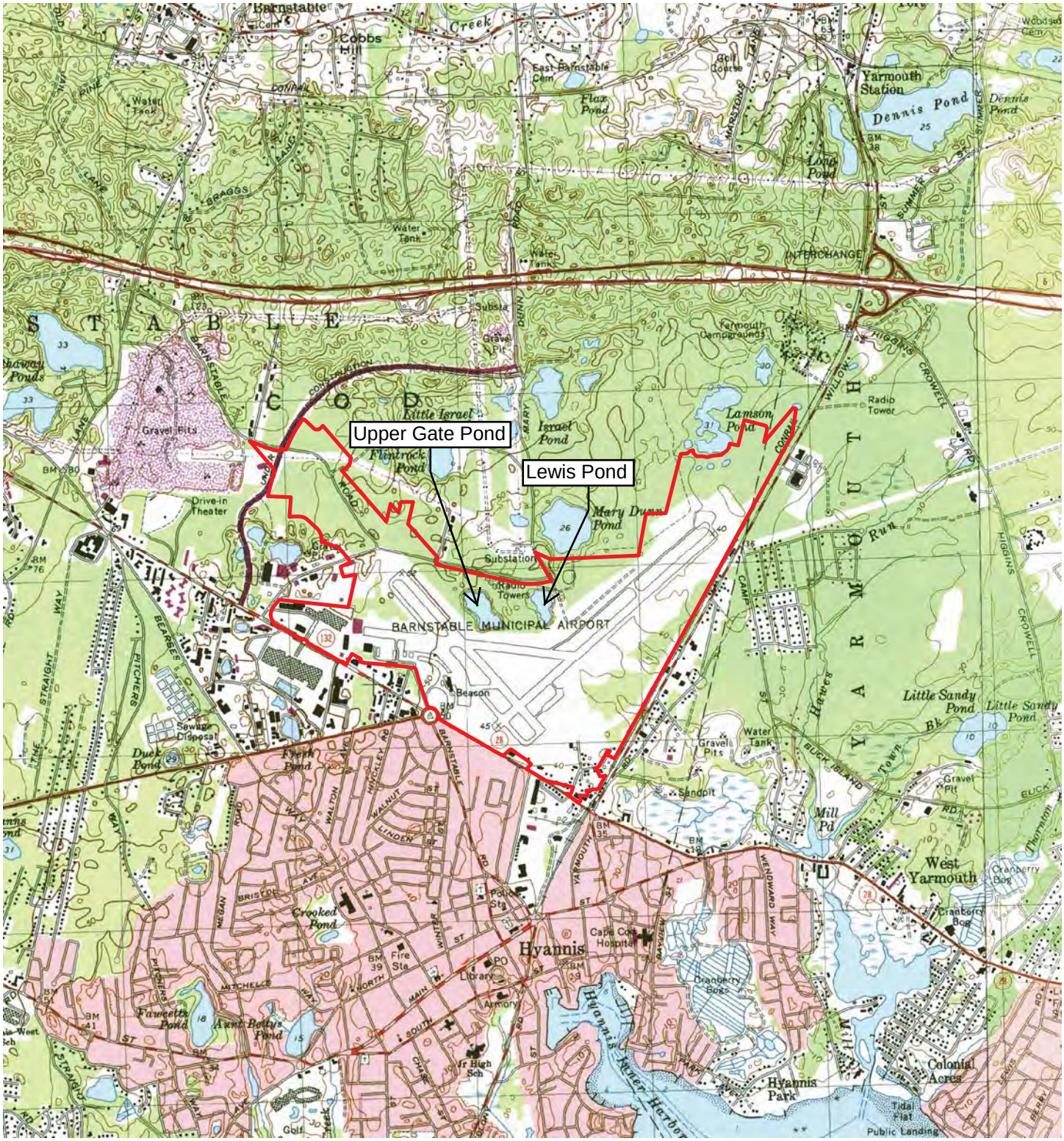
As set forth above, no threats of release were identified within the Disposal Site.

12.0 PUBLIC INVOLVEMENT

Pursuant to 310 CMR 40.1403 (3)(f), the Chief Municipal Officer and the Board of Health of the Town of Barnstable have been notified of the availability of the PSS-NC. A copy of the notification is provided at Appendix C.

FIGURES

1- USGS Locus Map
2- Disposal Site Map
3- Stormwater Drainage Map
4- Sediment Sampling Locations – Lewis Pond
5- Sediment Sampling Locations – Upper Gate Pond
6- Sediment Sampling Locations – Mary Dunn Pond
7- Estimated Groundwater Flow Direction
8- Monitoring Well Locations
9- Priority Resource Map (Lewis Pond)
10- Priority Resource Map (Upper Gate Pond)



Document Path: H:\Projects\HYA\11072 (697 Barnstable Airport)\GIS_Maps\Maps\USGS_Locus_20130815.mxd

Legend

Airport Property Line

*Hyannis Topographic Quadrangle

N

0.5 Miles

Horsley Witten Group
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USGS Locus Map
Cape Cod Gateway Airport
Hyannis, MA

Date: 4/17/2018

Figure 1

Mary Dunn Pond
Runway 15-33
Disposal Site Boundary
Runway 6-24
Upper Gate Pond
Lewis Pond
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Document Path: H:\Projects\HYA\11024 BMA Risk Assessment\GIS\Maps\ERC\20150515_MonWellLocs.mxd

Legend

*MassGIS, April 2014

- Disposal Site Boundary

N

0 600

1" = 600 feet

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Disposal Site Map
Cape Cod Gateway Airport
Hyannis, MA

Date: 5/15/2014

Figure2

DRAINAGE AREA A

DRAINAGE AREA E

DRAINAGE AREA F

DRAINAGE AREA G

DRAINAGE AREA O

DRAINAGE AREA N

DRAINAGE AREA C

DRAINAGE AREA D

DRAINAGE AREA B

DRAINAGE AREA M

DRAINAGE AREA H

DRAINAGE AREA I

DRAINAGE AREA J

DRAINAGE AREA K

DRAINAGE AREA L

Outfall Plaza
(Outfall F)
Sediment Sample

Outfall J Sediment Sample

VORTECHS WATER QUALITY UNIT

VORTECHS WATER QUALITY UNITS

INFILTRATION BASIN

UNDERGROUND RECHARGE STRUCTURES

DISCHARGE CONTROL VALVES

O/WS AND PUMP STATION

MAIN TERMINAL APRON

EAST RAMP APRON

RUNWAY 15/33

RUNWAY 6/24

TAXIWAY A

TAXIWAY B

TAXIWAY C

TAXIWAY D

MARY DUNN POND

LEWIS POND

UPPER GATE POND

LEGEND

RW1533-29 CB: Catchbasin
RW1533-29 LCB: Leaching Catchbasin
RW1533-29 LCB/RD: Leaching Catchbasin / Roof Drain
RW1533-29 LCB/UGDC: Leaching Catchbasin with Underground Discharge Chamber
RW1533-29 LB: Leaching Basin with No Catchment
O/WS: Oil Water Separator
Airport Property Line
BIO: Bioretention Basin
T31 VORTECH: CONTECH Water Quality Structure

NOTE:

All locations of buildings, utilities, and surface features derived from Town of Barnstable, Massachusetts, Geographic Information System. Location and nature of stormwater utilities based upon data provided by Edwards and Kelcey Barnstable Municipal Airport Drainage Plan (07/07), and field inspection of select utilities by Horsley Witten on July 15, 2008.

AIRPORT BUILDINGS/AREAS TABLE

NO.	BUILDING
1	RECTRIX AERODOME CENTER HANGAR
2	CAPE AIR/NANTUCKET AIR HANGAR
3	GRIFFIN AVIONICS
4	GRIFFIN AVIONICS FUEL STATION
5	SPECIALIZED AUTOMOTIVE
6	HANGAR 2 – CAPE AIR / AIRPORT MAINTENANCE
7	GATE F FUEL FARM
8	HANGAR BUILDING (VACANT)
9	ALLIES AIR
10	MAIN TERMINAL BUILDING
11	MAIN TERMINAL GENERATOR
12	AIR TRAFFIC CONTROL TOWER (ATCT)
13	SOUTH RAMP DEICING PAD
14	AIRPORT ARFF/SRE FACILITY
15	RECTRIX/AIR CAPE COD
16	RECTRIX/AIR CAPE COD FUEL FARM
17	AIRPORT LIGHTING VAULT
18	BMA T-HANGAR
19	AMA NANTUCKET INC.
20	CAPEFLIGHT INSTRUCTION
21	HYANNIS HANGAR LLC
22	HEXAGON HANGAR
23	KINGSBURY AVIATION (BUILDING 1)
24	KINGSBURY AVIATION (BUILDING 2)
25	STEAMSHIP AUTH. PARKING LOT
26	HERTZ CAR WASH
27	AVIS CAR WASH
28	BUDGET TRUCK RENTAL

GRAPHIC SCALE

250 0 125 250 500 1000

(IN FEET)

Horsley Witten Group
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Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date: 12/29/2015
Designed By: GWTH
Drawn By: GWTH
Checked By: JEL

Plan Title:

Prepared For:

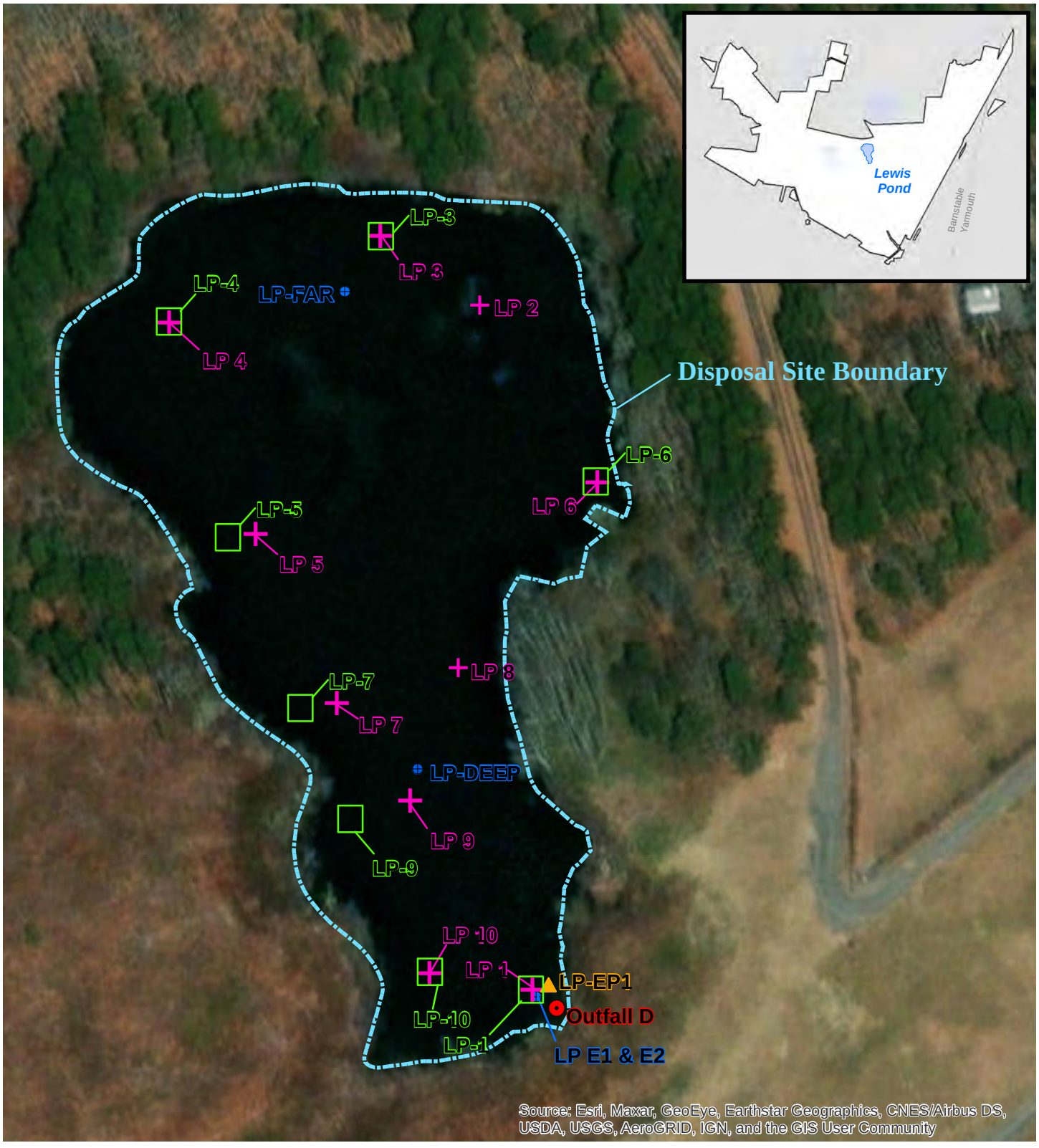
Revisions

1	12-27-11	ERK	JEL Update to Drainage Plan
2	4-13-12	GH	JEL Update to Drainage Plan
3	4-27-12	GH	JEL Update to Drainage Plan
4	1-25-13	GH	JEL Update to Drainage Plan
5	7-28-13	GH	JEL SWPPP Figure 3
6	9-30-15	GH	JEL SWPPP Figure 3
7	12-29-15	GH	JEL SWPPP Figure 3
8	12-31-19	LEN	PAC Update to Drainage Plan

Project Number: 14105

Figure: Figure 3

last modified: 01/16/20 printed: 01/16/20 by ln H:\Projects\HYA\14105 BMA On-Call Eng Services\SWPPP\Drawings\Current Drainage Plan\151229 - Drainage Plan.dwg



Legend

- Cape Cod Gateway Airport Property Boundary
- Surface Water and Disposal Site Boundry
- Stormwater Outfalls
- 05/04/2004 Sediment Sampling Location
- 10/20/2005 Sediment Sampling Locations
- 02/16/2011 Sediment Sampling Locations
- 08/02/2021 Sediment Sampling Locations

N

0 40 80
Feet

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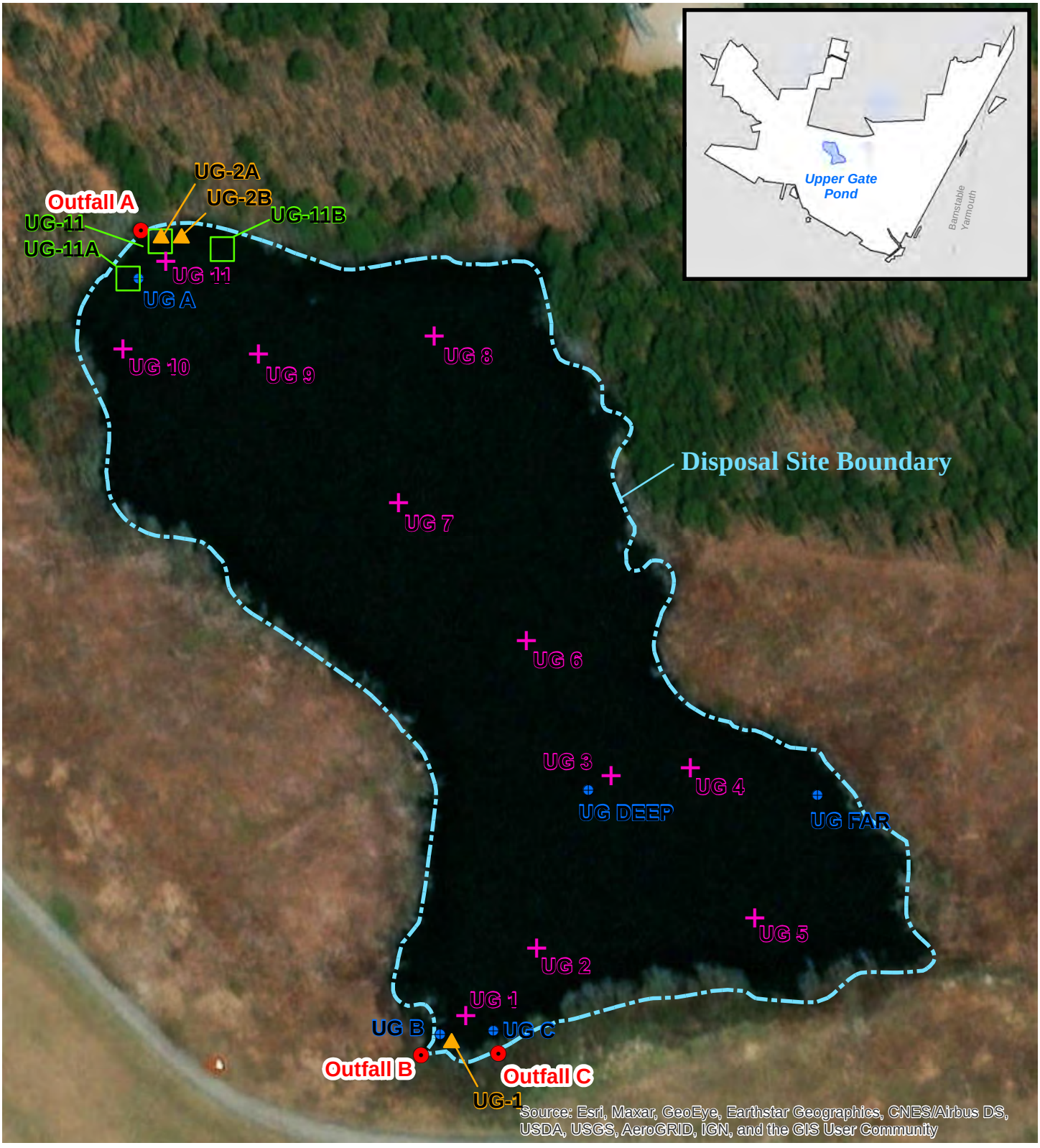
Sediment Sampling Locations
Lewis Pond
Cape Cod Gateway Airport
Hyannis, MA

Date: 6/8/2023 Figure 4

Path: K:\Projects\HYA\21083 FY22 On-Call Services\GIS\Maps\211004_LewisPond_SamplingLocations.mxd



Legend

- Cape Cod Gateway Airport Property Boundary
- Surface Water and Disposal Site Boundry
- Stormwater Outfalls
- 05/04/2004 Sediment Sampling Location
- 10/20/2005 Sediment Sampling Locations
- 02/16/2011 Sediment Sampling Locations
- 08/02/2021 Sediment Sampling Locations

N

0 40 80

Feet

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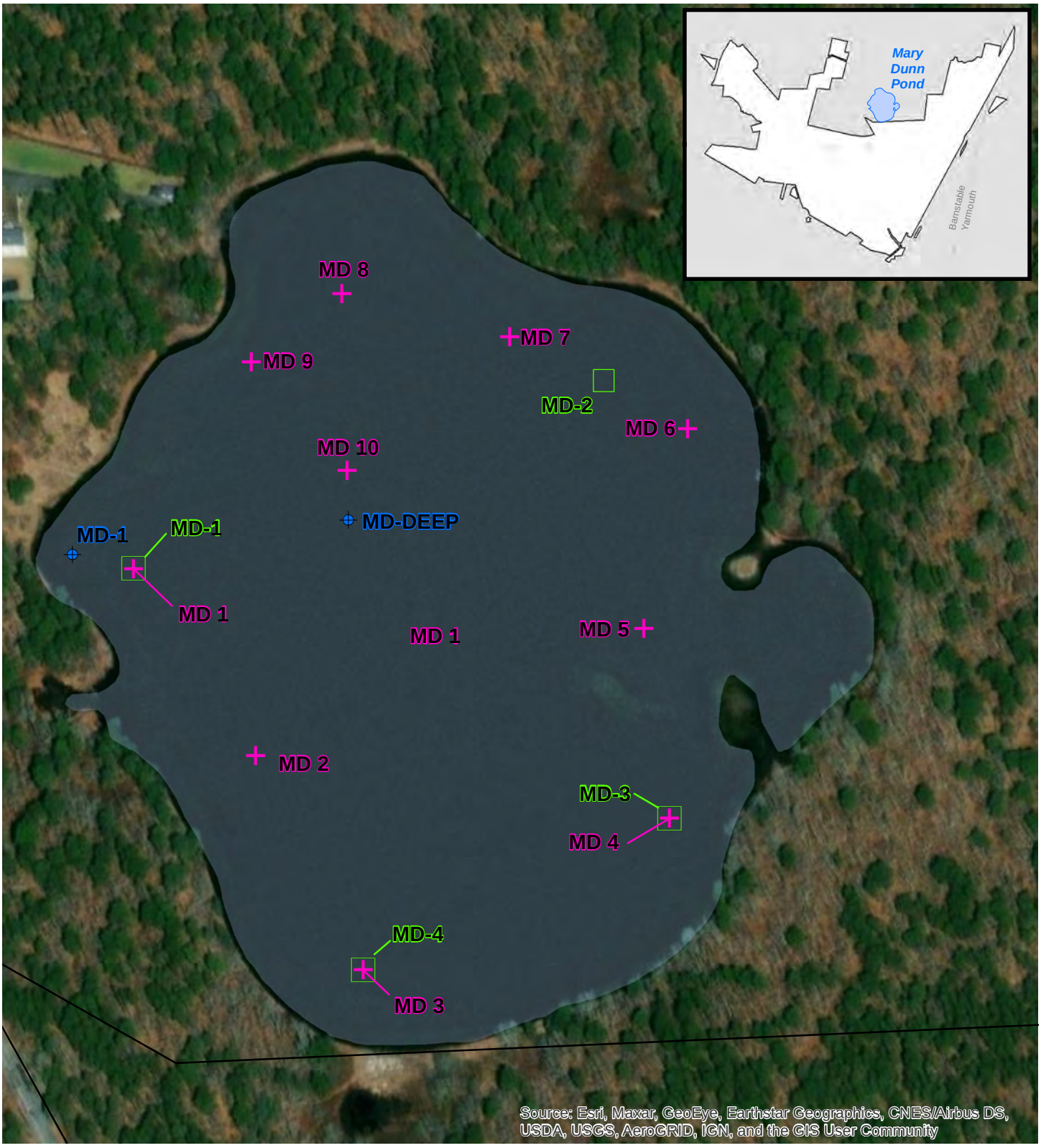
Sediment Sampling Locations
Upper Gate Pond
Cape Cod Gateway Airport
Hyannis, MA

Date: 6/8/2023

Figure 5

Path: K:\Projects\HYA\21083 FY22 On-Call Services\GIS\Maps\211004_UpperGate_SamplingLocations.mxd



Legend

- Cape Cod Gateway Airport Property Boundary
- Surface Water
- 10/20/2005 Sediment Sampling Locations
- 2/16/2011 Sediment Sampling Locations
- 08/02/2021 Sediment Sampling Locations

N

0 85 170

Feet

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Sediment Sampling Locations
Mary Dunn Pond
Cape Cod Gateway Airport
Hyannis, MA

Date: 6/8/2023

Figure 6

Path: K:\Projects\HYA\21083 FY22 On-Call Services\GIS\Maps\211004_MaryDunn_SamplingLocations.mxd

Legend

- Drinking Water Wells
- Barnstable Municipal Airport Property Boundary
- Groundwater Contours
- Disposal Site Boundary

N

0 750

1 in = 750 feet

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
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Estimated Groundwater Flow Direction
Cape Cod Gateway Airport
Hyannis, MA

Date: 10/30/23

Figure 1

** Cape Cod Commission (CCC) Groundwater Contours*

Document Path: H:\Projects\HYA\11024 BMA Risk Assessment\GIS\Maps\ERC\20150515_MonWellLocs.mxd

Legend

**MassGIS, April 2014*

- Monitoring Wells Installed by HW on March 31, 2011
- Public Water Supplies*

N

0 600

1" = 600 feet

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Sustainable Environmental Solutions
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Tel: 508-833-6600 • Fax: 508-833-3150 • www.horsleywitten.com

Monitoring Well Locations
Barnstable Municipal Airport
Hyannis, MA

Date: 5/15/2014

Figure 8

MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

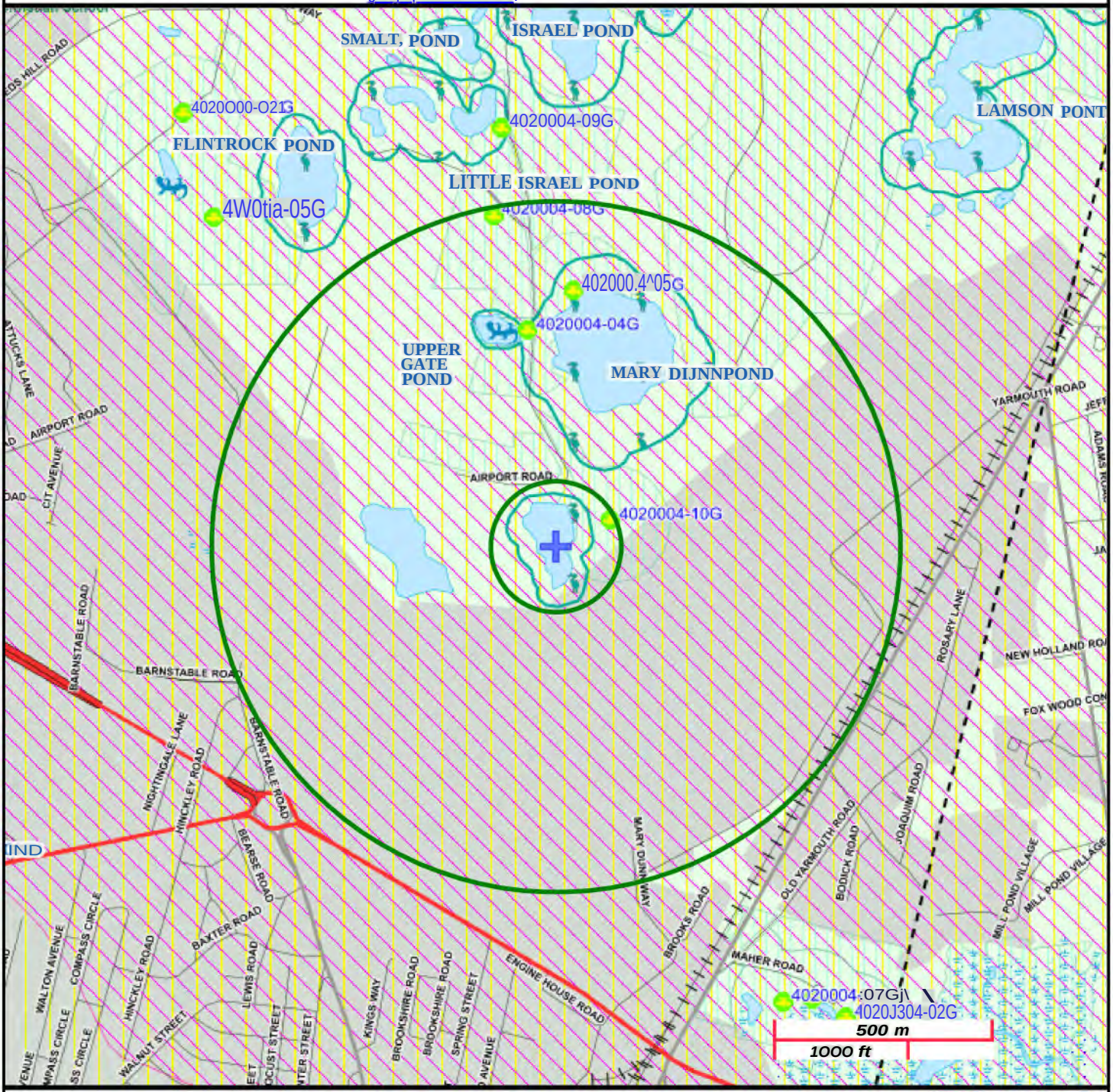
Site Information:

AIRPORT ROAD BARNSTABLE, MA

NAD83 UTM Meters:
4613999mN , 393497mE (Zone: 19)
October 27, 2023

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: https://www.mass.gov/orgs/massgis-bureau-of-geographic-information.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)...

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMAIOOyr Floodplain; Protected Open Space; ACEC

NHESP Pri-Hab of Rare Species: Vernal Pnnh Cert , Potential

Solid Waste Landfill; PWS: Com. GW,SW.Emerg.,Non-Com.

Figure 9

MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

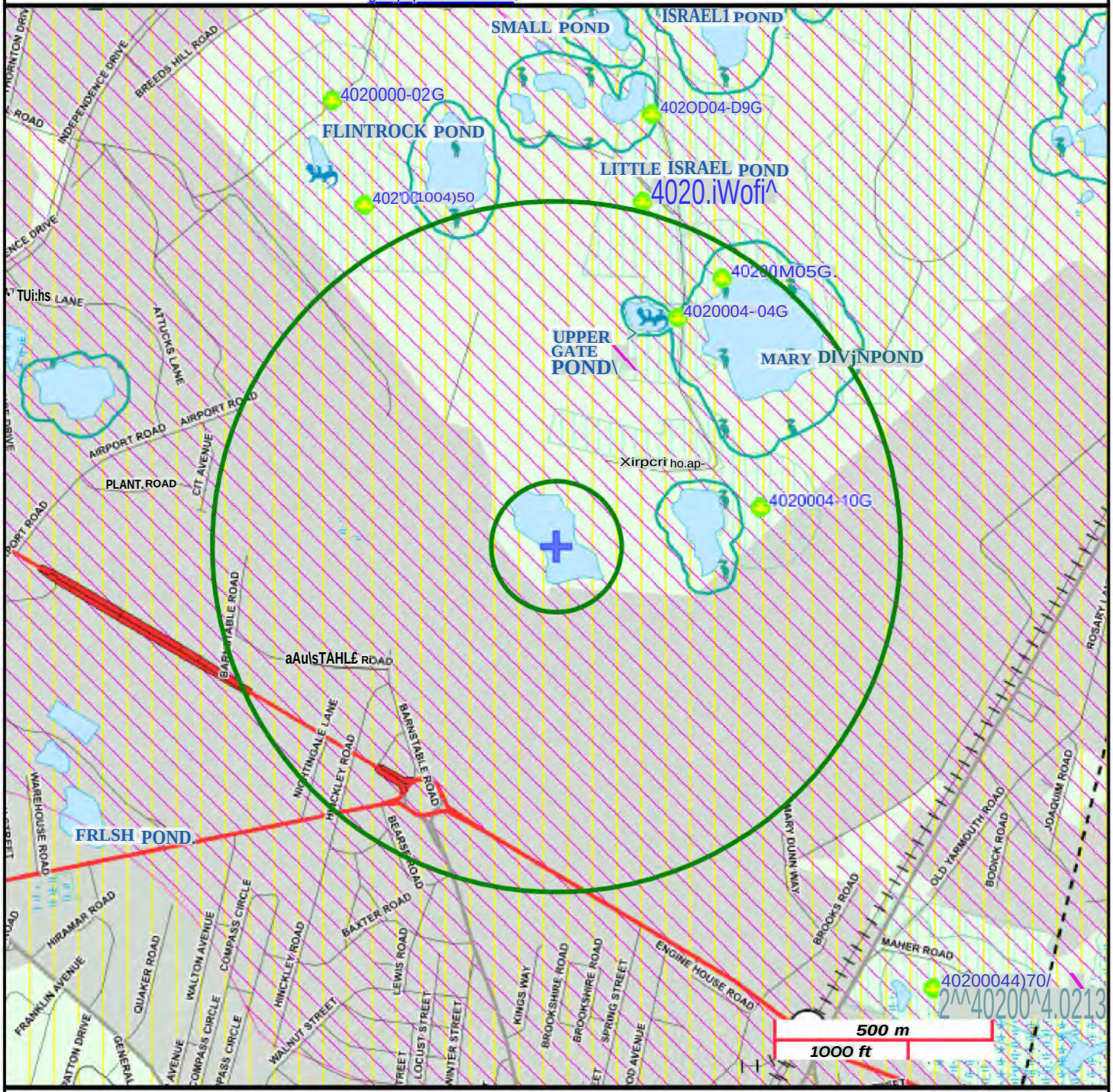
Site Information:

BARNSTABLE ROAD BARNSTABLE, MA

NAD83 UTM Meters:
4613974mN , 393147mE (Zone: 19)
October 27, 2023

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: https://www.mass.gov/orgs/massgis-bureau-of-geographic-information.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct
Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore. Dam
Aquifers: Medium Yield, High Yield, EPA Sole Source
Non Potential Drinking Water Source Area: Medium, High (Yield)...
PWS Protection Areas: Zone II, IWPA, Zone A
Hydrography: Open Water, PWS Reservoir, Tidal Flat
Wetlands: Freshwater, Saltwater, Cranberry Bog
FEMAIOOyr Floodplain; Protected Open Space; ACEC
NHESP Pri-Hab of Rare Species: Vernal Pnnh Cert , Potential
Solid Waste Landfill; PWS: Com. GW,SW.Emerg., Non-Com.

Figure 10

Table 1 Lewis Pond Sediment Data
Table 2 Upper Gate Pond Sediment Data
Table 3 Other Permitted Outfall Sediment Data
Table 4 2011 Groundwater Sampling Results
Table 5 Mary Dunn Pond Sediment Data

Table 1 - Lewis Pond Sediment Data (Lead and PAHs Only)

ANALYTE	SAMPLE ID:				HYAS1**	LP-EP1	LP-EP1	LP-EP2	LP-DEEP	LP-FAR
	COLLECTION DATE:				10/1/2001	5/4/04	10/20/05	10/20/05	10/20/05	10/20/05
	SAMPLE DEPTH:				Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)					
Polycyclic Aromatic Hydrocarbons										
2-Methylnaphthalene	NA	700	300,000	5,000,000	ND	2,000 U	46 U	48 U	478 U	80 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	ND	2,000 U	46 U	48 U	478 U	80 U
Acenaphthylene	NA	1,000	10,000	10,000,000	ND	2,000 U	46 U	48 U	478 U	80 U
Anthracene	57	1,000,000	1,000,000	10,000,000	ND	2,000 U	*89*	*85*	478 U	80 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	ND	2,000 U	*633*	*726*	478 U	*169*
Benzo(a)pyrene	150	2,000	2,000	300,000	ND	2,000 U	*1,070*	*1,150*	478 U	*197*
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	ND	2,000 U*	1,210	1,210	478 U	196
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	ND	2,000 U	661	528	478 U	80 U
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	ND	2,000 U	1,200	1,280	478 U	193
Chrysene	170	70,000	70,000	10,000,000	ND	2,000 U*	*1,020*	*1,170*	478 U	*201*
Dibenzo(a,h)anthracene	33	700	700	300,000	ND	2,000 U	*247*	*204*	478 U	80 U
Fluoranthene	420	1,000,000	1,000,000	10,000,000	270	3,400 J	*2,180*	*2,130*	478 U	329
Fluorene	77	1,000,000	1,000,000	10,000,000	ND	2,000 U	46	48	478 U	80 U
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	ND	2,000 U	745 J	611	478 U	80 U
Naphthalene	180	4,000	500,000	10,000,000	ND	2,000 U	46 U	48 U	478 U	80 U
Phenanthrene	200	10,000	500,000	10,000,000	ND	2,000 U*	*770*	*938*	478 U	80 U
Pyrene	200	1,000,000	1,000,000	10,000,000	*250*	*2,590 J*	*1,670*	*1,720*	478U	*257*
Total Lead										
Lead, Total	130,000	200,000	200,000	6,000,000	85,000	***333,000***	162,000	121,000	***223,000***	104,000

Table 1 - Lewis Pond Sediment Data (Lead and PAHs Only) Continued

ANALYTE	SAMPLE ID:				LP1	LP2	LP3	LP4	LP5	LP6	LP7	LP8	LP9	LP10
	COLLECTION DATE:				2/16/11	2/16/11	2/16/11	2/16/11	2/16/11	2/16/11	2/16/11	2/16/11	2/16/11	2/16/11
	SAMPLE DEPTH:				0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)									
Polycyclic Aromatic Hydrocarbons														
2-Methylnaphthalene	NA	700	300,000	5,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Acenaphthylene	NA	1,000	10,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Anthracene	57	1,000,000	1,000,000	10,000,000	806 U	2,990 U	3,650U	3,600 U	4,130 U	3,540U	4,160 U	3,750 U	2,950 U	921 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Benzo(a)pyrene	150	2,000	2,000	300,000	404 U	1,500 U	1,830 U	1,810 U	2,070 U	1,770U	2,090 U	1,880 U	1,480 U	462 U
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Chrysene	170	70,000	70,000	10,000,000	404 U	1,500 U	1,830 U	1,810 U	2,070 U	1,770 U	2,090 U	1,880 U	1,480 U	462 U
Dibenzo(a,h)anthracene	33	700	700	300,000	404 U	1,500 U	1,830 U	1,810 U	2,070 U	1,770 U	2,090 U	1,880 U	1,480 U	462 U
Fluoranthene	420	1,000,000	1,000,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Fluorene	77	1,000,000	1,000,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Naphthalene	180	4,000	500,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Phenanthrene	200	10,000	500,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Pyrene	200	1,000,000	1,000,000	10,000,000	806 U	2,990 U	3,650 U	3,600 U	4,130 U	3,540 U	4,160 U	3,750 U	2,950 U	921 U
Total Lead														
Lead, Total	130,000	200,000	200,000	6,000,000	***325,000***	95,600	49,000 U	52,600	51,000 U	106,000	58,200 U	46,500 U	41,500 U	14,200 U

Table 1 - Lewis Pond Sediment Data (Lead and PAHs Only) Continued

ANALYTE	SAMPLE ID:				LP-1	LP-COMP 1[9]	LP-COMP 2[10]	LP-3	LP-4	LP-5	LP-6	LP-7	LP-9	LP-10
	COLLECTION DATE:				8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021	8/2/2021
	SAMPLE DEPTH:				0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'	0-2'
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)									
Polycyclic Aromatic Hydrocarbons														
2-Methylnaphthalene	NA	700	300,000	5,000,000	30 U	21 U	200 U	150 U	230 U	180 U	320 U	120 U	300 U	86 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	30	21 U	200 U	150 U	230 U	180 U	320 U	120 U	300 U	86 U
Acenaphthylene	NA	1,000	10,000	10,000,000	74	57	200 U	150 U	230 U	180 U	320 U	120 U	300 U	86 U
Anthracene	57	1,000,000	1,000,000	10,000,000	*1,300*	*65*	200 U	150 U	230 U	180 U	320 U	120 U	300 U	86 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	*920*	*440*	*320*	*230*	230 U	*230*	320 U	*320*	*410*	*300*
Benzo(a)pyrene	150	2,000	2,000	300,000	*1,300*	*600*	*320*	*300*	230 U	*280*	320 U	*430*	*750*	*510*
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	2,200	1,000	500	600	360	490	520	750	1,600	990
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	1,200	490	220	270	230 U	240	320 U	350	800	470
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	660	350	200 U	150	230 U	180 U	320 U	220	400	260
Chrysene	170	70,000	70,000	10,000,000	*1,400*	*660*	*360*	*350*	*250*	*340*	*350*	*490*	*980*	*610*
Dibenzo(a,h)anthracene	33	700	700	300,000	*230*	*100*	200 U	150 U	230 U	180 U	320 U	120 U	300 U	*96*
Fluoranthene	420	1,000,000	1,000,000	10,000,000	*2,800*	*1,200*	*550*	*630*	*580*	*600*	*790*	*860*	*2,100*	*1,200*
Fluorene	77	1,000,000	1,000,000	10,000,000	46	32	200 U	150 U	230 U	180 U	320 U	120 U	*300*	*90*
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	1,400	550	240	330	230 U	290	330	430	940	580
Naphthalene	180	4,000	500,000	10,000,000	30 U	21 U	200 U	150 U	230 U	*400*	320 U	120 U	300 U	86 U
Phenanthrene	200	10,000	500,000	10,000,000	*1,200*	*500*	*240*	*280*	*350*	*300*	*410*	*380*	*980*	*550*
Pyrene	200	1,000,000	1,000,000	10,000,000	*2,400*	*910*	*470*	*500*	*460*	*500*	*600*	*700*	*1,600*	*930*
Polycyclic Aromatic Hydrocarbons Ratios[11]														
Fluoranthane to Pyrene Ratio (diesel exhaust particles is 0.25 to 1.38, diesel fuel is 0.38, urban runoff is 0.23 to 1.07 and gasoline exhaust particles is 0.90)					1.17	1.32	1.17	1.26	1.26	1.20	1.32	1.23	1.31	1.29
Phenanthrene to Anthracene Ratio (diesel exhaust particles is 1.3 to 78, diesel fuel is >800, urban runoff is 0.56 to 1.47, and gasoline exhaust particles is 1.79)					0.92	7.69	2.40	3.73	3.04	3.33	2.56	6.33	6.53	12.79
Total Lead														
Lead, Total	130,000	200,000	200,000	6,000,000	14,800	107,000	*196,000*	*198,000*	*184,000*	***241,000***	119,000	***371,000***	108,000	*240,000*

1. Italic indicates analyte exceeds Revised Sediment Screening Values, Massachusetts Department of Environmental Protection, 2005.
2. Bold Indicates analyte exceeds Method 1 Soil Standards, 2019 Massachusetts Contingency Plan.
3. J indicates value is estimated and is above the laboratory method detection limit and below the laboratory reporting limit.
4. U indicated result is less than the laboratories reporting limit
5. * indicates estimated value due to laboratory quality control issues
6. ug/kg indicated microgram per kilogram
7. ND indicates not detected, laboratory detection limit unknown
8. ** indicates sample locaiton is unknown.
9. LP-COMP 1 is a composite of LP-1, LP-10, LP9, and LP7.
10. LP-COMP 2 is a composite of LP-3, LP-4, LP5, and LP6.
11. PAH ratios obtained from Ecological Risk Assessment of Polycyclic Aromatic Hydrocarbons in Sediment: Identifying Sources and Ecological Hazard, Neff etal, 2004

Table 2 - Upper Gate Pond Sediment Data (Lead and PAHs only)

ANALYTE	SAMPLE ID:				HYAS2**	UG-1	UG-2A	UG-2B	UG-A	UG-B
	COLLECTION DATE:				10/1/2001	5/4/04	5/4/04	5/4/04	10/20/05	10/20/05
	SAMPLE DEPTH:				Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)					
Polycyclic Aromatic Hydrocarbons										
2-Methylnaphthalene	NA	700	300,000	5,000,000	ND	2,790 U	476 U	2,620 U	31 U	31 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	ND	2,790 U	476 U	2,620 U	31 U	31 U
Acenaphthylene	NA	1,000	10,000	10,000,000	ND	2,790 U	476 U	2,620 U	37	31 U
Anthracene	57	1,000,000	1,000,000	10,000,000	*1,000*	2,790 U	476 U	2,620 U	55	31 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	*4,100*	2,790 U	476 U	2,620 U	*428*	*265*
Benzo(a)pyrene	150	2,000	2,000	300,000	*4,700*	2,790 U	476 U	2,620 U	*538*	*343*
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	5,900	3,960 J	476 J	2,620 U*	495	429
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	3,500	2,790 U	476 U	2,620 U	240	171
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	5,300	2,790 U	476 U	2,620 U	508	367
Chrysene	170	70,000	70,000	10,000,000	*6,000*	*3,480 J*	*476 J*	2,620 U*	*612*	*368*
Dibenzo(a,h)anthracene	33	700	700	300,000	***940***	2,790 U	476 U	2,620 U	*94*	*75*
Fluoranthene	420	1,000,000	1,000,000	10,000,000	*13,000*	*7,710 J*	*781 J*	2,830 J	*972*	*630*
Fluorene	77	1,000,000	1,000,000	10,000,000	ND	2,790 U	476 U	2,620 U*	31 U	31 U
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	3,500	2,790 U	476 U	2,620 U	262	198
Naphthalene	180	4,000	500,000	10,000,000	ND	2,790 U	476 U	2,620 U	31 U	31 U
Phenanthrene	200	10,000	500,000	10,000,000	*7,400*	*2,990 J*	*476 J*	2,620 U	*459*	*364*
Pyrene	200	1,000,000	1,000,000	10,000,000	*10,000*	*5,460 J*	*898 J*	2,620 U*	*1,080*	*512*
Total Lead										
Lead, Total	130,000	200,000	200,000	6,000,000	***360,000***	***442,000***	12,900	***245,000***	14,600	75,500

Table 2 - Upper Gate Pond Sediment Data (Lead and PAHs only) Continued

ANALYTE	SAMPLE ID:				UG-C	UG-DEEP	UG-FAR	UG1	UG2	UG3
	COLLECTION DATE:				10/20/05	10/20/05	10/20/05	2/16/2011	2/16/2011	2/16/2011
	SAMPLE DEPTH:				Unknown	Unknown	Unknown	0-1.5'	0-1.5'	0-1.5'
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)					
Polycyclic Aromatic Hydrocarbons										
2-Methylnaphthalene	NA	700	300,000	5,000,000	159 U	316 U	182 U	483 U	476 U	6,280 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	159 U	316 U	182 U	483 U	476 U	6,280 U
Acenaphthylene	NA	1,000	10,000	10,000,000	159 U	316 U	182 U	483 U	476 U	6,280 U
Anthracene	57	1,000,000	1,000,000	10,000,000	159 U	316 U	182 U	483 U	476 U	6,280 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	*832*	316 U	*284*	*1,160*	476 U	6,280 U
Benzo(a)pyrene	150	2,000	2,000	300,000	*1,260*	*518*	*437*	*1,060*	239 U	3,150 U
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	2,010	713	671	1,330	476 U	6,280 U
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	638	316 U	182 U	562	476 U	6,280 U
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	1,550	650	605	1,370	476 U	6,280 U
Chrysene	170	70,000	70,000	10,000,000	*1,580*	*574*	*587*	*1,560*	239 U	3,150 U
Dibenzo(a,h)anthracene	33	700	700	300,000	*276*	316 U	182 U	*387*	239 U	3,150 U
Fluoranthene	420	1,000,000	1,000,000	10,000,000	*2,190*	*1,100*	*1,210*	*3,620*	476 U	6,280 U
Fluorene	77	1,000,000	1,000,000	10,000,000	159 U	316 U	182 U	483 U	476 U	6,280 U
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	759	316 U	211	567	476 U	6,280 U
Naphthalene	180	4,000	500,000	10,000,000	159 U	316 U	182 U	483 U	476 U	6,280 U
Phenanthrene	200	10,000	500,000	10,000,000	*1,000*	*341*	*372*	*2,370*	476 U	6,280 U
Pyrene	200	1,000,000	1,000,000	10,000,000	*1,480*	*726*	*995*	*2,910*	476 U	6,280 U
Total Lead										
Lead, Total	130,000	200,000	200,000	6,000,000	***352,000***	***676,000***	***225,000***	82,500	43,100	*152,000*

Table 2 - Upper Gate Pond Sediment Data (Lead and PAHs only) Continued

ANALYTE	SAMPLE ID:				UG4	UG5	UG6	UG7	UG8	UG9
	COLLECTION DATE:				2/16/2011	2/16/2011	2/16/2011	2/16/2011	2/16/2011	2/16/2011
	SAMPLE DEPTH:				0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)					
Polycyclic Aromatic Hydrocarbons										
2-Methylnaphthalene	NA	700	300,000	5,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Acenaphthylene	NA	1,000	10,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Anthracene	57	1,000,000	1,000,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Benzo(a)pyrene	150	2,000	2,000	300,000	1,970 U	2,780 U	1,800 U	2,090 U	1,970 U	2,350 U
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Chrysene	170	70,000	70,000	10,000,000	1,970 U	2,780 U	1,800 U	2,090 U	1,970 U	2,350 U
Dibenzo(a,h)anthracene	33	700	700	300,000	1,970 U	2,780 U	1,800 U	2,090 U	1,970 U	2,350 U
Fluoranthene	420	1,000,000	1,000,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Fluorene	77	1,000,000	1,000,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Naphthalene	180	4,000	500,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Phenanthrene	200	10,000	500,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Pyrene	200	1,000,000	1,000,000	10,000,000	3,930 U	5,550 U	3,580 U	4,160 U	3,930 U	4,690 U
Total Lead										
Lead, Total	130,000	200,000	200,000	6,000,000	60,100 U	78,400	50,300 U	55,800 U	53,700 U	65,300

Table 2 - Upper Gate Pond Sediment Data (Lead and PAHs only) Continued

ANALYTE	SAMPLE ID:				UG10	UG11	UG-11	UG-11A	UG-11B
	COLLECTION DATE:				2/16/2011	2/16/2011	8/6/2021	8/6/2021	8/6/2021
	SAMPLE DEPTH:				0-1.5'	0-1.5'	0-2'	0-2'	0-2'
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)				
Polycyclic Aromatic Hydrocarbons									
2-Methylnaphthalene	NA	700	300,000	5,000,000	3,930 U	3,600 U	62 J	18 J	38
Acenaphthene	NA	4,000	1,000,000	10,000,000	3,930 U	3,600 U	110 J	23 J	46
Acenaphthylene	NA	1,000	10,000	10,000,000	3,930 U	3,600 U	350	91	190
Anthracene	57	1,000,000	1,000,000	10,000,000	3,930 U	3,600 U	*520*	*100*	*260*
Benzo(a)anthracene	110	7,000	7,000	3,000,000	3,930 U	3,600 U	*3,400*	*530*	*820*
Benzo(a)pyrene	150	2,000	2,000	300,000	1,970 U	1,810 U	*4,000*	*710*	*1,100*
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	3,930 U	3,600 U	7,000	1,200	1,800
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	3,930 U	3,600 U	3,400	590	900
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	3,930 U	3,600 U	2,800	400	520
Chrysene	170	70,000	70,000	10,000,000	1,970 U	1,810 U	*5,200*	*820*	*1,400*
Dibenzo(a,h)anthracene	33	700	700	300,000	1,970 U	1,810 U	*690*	120	*210*
Fluoranthene	420	1,000,000	1,000,000	10,000,000	3,930 U	3,600 U	*10,000*	*1,500*	*2,200*
Fluorene	77	1,000,000	1,000,000	10,000,000	3,930 U	3,600 U	*270*	56 J	*88*
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	3,930 U	3,600 U	3,700	650	1,100
Naphthalene	180	4,000	500,000	10,000,000	3,930 U	3,600 U	120 J	38 J	79
Phenanthrene	200	10,000	500,000	10,000,000	3,930 U	3,600 U	*3,300*	*430*	*700*
Pyrene	200	1,000,000	1,000,000	10,000,000	3,930 U	3,600 U	*8,300*	*1,300*	*2,000*
Polycyclic Aromatic Hydrocarbons Ratios[9]									
Fluoranthane to Pyrene Ratio (diesel exhaust is 0.25 to 1.38, diesel fuel is 0.38, urban runoff is 0.23 to 1.07, gasoline exhaust is 0.90)							1.20	1.15	1.10
Phenanthrene to Anthracene Ratio (diesel exhaust is 1.3 to 78, diesel fuel is >800, urban runoff is 0.56 to 1.47, gasoline exhaust is 1.79)							6.35	4.30	2.69
Total Lead									
Lead, Total	130,000	200,000	200,000	6,000,000	56,600 U	44,800	***277,000***	***406,000***	***318,000***

1. Italic indicates analyte exceeds Revised Sediment Screening Values, Massachusetts Department of Environmental Protection, 2005.
2. Bold Indicates analyte exceeds Method 1 Soil Standards, 2019 Massachusetts Contingency Plan.
3. J indicates value is estimated and is above the laboratory method detection limit and below the laboratory reporting limit.
4. U indicated result is less than the laboratories reporting limit
5. * indicates estimated value due to laboratory quality control issues
6. ug/kg indicated microgram per kilogram
7. ND indicates not detected, laboratory detection limit unknown
8. ** indicates sample locaiton is unknown.
9. PAH ratios obtained from Ecological Risk Assessment of Polycyclic Aromatic Hydrocarbons in Sediment: Identifying Sources and Ecological Hazard, Neff et a

Table 3 - Other Permited Outfall Sediment Data (Lead and PAHs Only)

ANALYTE	SAMPLE ID:				OUTFALL_J (East Ramp to Lewis Pond)	OUTFALL_PLAZA (Kmart Plaza, Outfall F)
	COLLECTION DATE:				1/10/2022	1/10/2022
	SAMPLE DEPTH:				0-2'	0-2'
	Sediment Screening Criterion (ug/kg)	**S-1/GW-1 (ug/kg)**	**S-1/GW-3 (ug/kg)**	**Upper Concentration Limit (ug/kg)**	**Sample Results (ug/kg)**	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	NA	4,000	1,000,000	10,000,000	490 J	100 J
Fluoranthene	420	1,000,000	1,000,000	10,000,000	*41,000*	*9,700*
Naphthalene	180	4,000	500,000	10,000,000	770 U	200 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	***11,000***	*3,000*
Benzo(a)pyrene	150	2,000	2,000	300,000	***14,000***	***3,600***
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	**23,000**	**6,200**
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	7,900	1,800
Chrysene	170	70,000	70,000	10,000,000	*18,000*	*4,200*
Acenaphthylene	NA	1,000	10,000	10,000,000	120 J	38 J
Anthracene	57	1,000,000	1,000,000	10,000,000	*1,600*	*340*
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	12,000	2,600
Fluorene	77	1,000,000	1,000,000	10,000,000	*750 J*	*110 J*
Phenanthrene	200	10,000	500,000	10,000,000	*20,000*	*4,100*
Dibenzo(a,h)anthracene	33	700	700	300,000	***2,300***	*540*
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	**14,000**	3,100
Pyrene	200	1,000,000	1,000,000	10,000,000	*29,000*	*7,200*
2-Methylnaphthalene	NA	700	300,000	5,000,000	770 U	200 U
Polycyclic Aromatic Hydrocarbons Ratios[9]						
Fluoranthane to Pyrene Ratio (diesel exhaust is 0.25 to 1.38, diesel fuel is 0.38, urban runoff is 0.23 to 1.07, gasoline exhaust is 0.90)					1.41	1.35
Phenanthrene to Anthracene Ratio (diesel exhaust is 1.3 to 78, diesel fuel is >800, urban runoff is 0.56 to 1.47, gasoline exhaust is 1.79)					12.50	12.06
Total Lead						
Lead, Total	130,000	200,000	200,000	6,000,000	8,800	71,000

1. Italic indicates analyte exceeds Revised Sediment Screening Values, Massachusetts Department of Environmental Protection, 2005.
2. Bold Indicates analyte exceeds Method 1 Soil Standards, 2019 Massachusetts Contingency Plan.
3. J indicates value is estimated and is above the laboratory method detection limit and below the laboratory reporting limit.
4. U indicated result is less than the laboratories reporting limit
5. * indicates estimated value due to laboratory quality control issues
6. ug/kg indicated microgram per kilogram
7. ND indicates not detected, laboratory detection limit unknown
8. ** indicates sample locaiton is unknown.
9. PAH ratios obtained from Ecological Risk Assessment of Polycyclic Aromatic Hydrocarbons in Sediment: Identifying Sources and Ecological Hazard, Neff et al., 2004

Table 4: 2011 Groundwater Sampling Results
Cape Cod Gateway Airport
Hyannis, Massachusetts

Sample ID[1]			HW-401S					HW-401D				HW-402				HW-403				HW-404			
Sample Date			4/7/2011	5/12/2011	8/16/2011	10/20/2011	12/14/2011	4/7/2011	8/16/2011	10/20/2011	12/14/2011	4/7/2011	8/16/2011	10/20/2011	12/14/2011	4/7/2011	8/16/2011	10/20/2011	12/14/2011	4/7/2011	8/16/2011	10/20/2011	12/14/2011
	Method 1 GW-1	**Method 1 GW-3**																					
Dissolved Metals[3]																							
Arsenic	10	900	<2.5	NS	<2.5	3.2	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Barium	2,000	50,000	<25	NS	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	36	<25	<25	<25	<25	<25	<25	<25
Cadmium	5	4	<2.5	NS	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Chromium	100	300	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Lead	15	10	<10	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Mercury	2	20	<0.2	NS	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Selenium	50	100	<25	NS	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Silver	100	7	<5	NS	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Polynuclear Aromatic Hydrocarbons (PAHs)[3]																							
2-Methylnaphthalene	10	20,000	<0.21	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Acenaphthene	20	10,000	<0.21	<0.2 J	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Acenaphthylene	30	40	<0.21	<0.2 J	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Anthracene	60	30	<0.21	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Benzo(a)anthracene	1	1,000	0.08	<0.05 J	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	0.2	500	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	1	400	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	50	20	<0.21	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Benzo(k)fluoranthene	1	100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	2	70	0.09	<0.05 J	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)Anthracene	0.5	40	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	90	200	<0.21	<0.2 J	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Fluorene	30	40	<0.21	<0.2 J	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Indeno(1,2,3-cd)Pyrene	0.5	100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	140	20,000	<0.21	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	0.41	<0.2	<0.2	<0.20	0.91
Phenanthrene	40	10,000	<0.21	<0.2 J	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20
Pyrene	60	20	<0.21	<0.2 J	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20	<0.2	<0.2	<0.20	<0.20

NOTES:

1. Wells HW-401S, HW-401D, HW-402, HW-403, and HW-404 were historically referred to as HW-1S and HW-1D, HW-2, HW-3, and HW-4, respecitvely. All samples collected by Horsley Witten Group, Inc.
2. Method 1 values are from the Massachusetts Contingency Plan
3. Dissolved metals analyzed via EPA Method 3005A/3020A/6000/7000 and PAHs analyzed via EPA Method 8270D(SIM) by ESS Laboratory of Cranston, RI.
4. All values reported in micrograms per liter (ug/L).
5. "<" indicates that the sample was not detected above the laboratory reporting limit
6. NS = not sampled
7. "J" flag = concentration is estimated due to laboratory quality control issue

Table 5 - Mary Dunn Pond Sediment Data (Lead and PAHs Only)

ANALYTE	SAMPLE ID:				HYAS3**	MD-1	MD-DEEP	MD1	MD2	MD3	MD4	MD5
	COLLECTION DATE:				10/1/2001	10/20/05	10/20/05	2/16/11	2/16/11	2/16/11	2/16/11	2/16/11
	SAMPLE DEPTH:				Unknown	Unknown	Unknown	0-1.5'	0-1.5	0-1.5'	0-1.5	0-1.5'
	Sediment Screening Values (ug/kg)	**S-1/GW-1 (ug/kg)**	**S-1/GW-3 (ug/kg)**	**Upper Concentration Limit (ug/kg)**	**Sample Results (ug/kg)**							
Polycyclic Aromatic Hydrocarbons												
2-Methylnaphthalene	NA	700	300,000	5,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Acenaphthylene	NA	1,000	10,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Anthracene	57	1,000,000	1,000,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Benzo(a)pyrene	150	2,000	2,000	300,000	ND	34 U	165 U	225 U	195 U	803 U	222 U	512 U
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Chrysene	170	70,000	70,000	10,000,000	ND	34 U	165 U	225 U	195 U	803 U	222 U	512 U
Dibenzo(a,h)anthracene	33	700	700	300,000	ND	34 U	165 U	225 U	195 U	803 U	222 U	512 U
Fluoranthene	420	1,000,000	1,000,000	10,000,000	ND	34 U	*224*	449 U	389 U	1,600 U	442 U	1,020 U
Fluorene	77	1,000,000	1,000,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Naphthalene	180	4,000	500,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Phenanthrene	200	10,000	500,000	10,000,000	ND	34 U	165 U	449 U	389 U	1,600 U	442 U	1,020 U
Pyrene	200	1,000,000	1,000,000	10,000,000	ND	34 U	182	449 U	389 U	1,600 U	442 U	1,020 U
Total Lead												
Lead, Total	130,000	200,000	200,000	6,000,000	ND	19,000	***624,000***	56,000	3,700 U	24,900	13,500	13,200 U

Table 5 - Mary Dunn Pond Sediment Data (Lead and PAHs Only) Continued

ANALYTE	SAMPLE ID:				MD6	MD7	MD8	MD9	MD10	MD-COMP[9]
	COLLECTION DATE:				2/16/11	2/16/11	2/16/11	2/16/11	2/16/11	8/2/2021
	SAMPLE DEPTH:				0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-1.5'	0-2
	Sediment Screening Values (ug/kg)	S-1/GW-1 (ug/kg)	S-1/GW-3 (ug/kg)	Upper Concentration Limit (ug/kg)	Sample Results (ug/kg)					
Polycyclic Aromatic Hydrocarbons										
2-Methylnaphthalene	NA	700	300,000	5,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Acenaphthene	NA	4,000	1,000,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Acenaphthylene	NA	1,000	10,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Anthracene	57	1,000,000	1,000,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Benzo(a)anthracene	110	7,000	7,000	3,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Benzo(a)pyrene	150	2,000	2,000	300,000	380 U	1,600 U	1,520 U	1,190 U	1,520 U	38 U
Benzo(b)fluoranthene	NA	7,000	7,000	3,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Benzo(ghi)perylene	NA	1,000,000	1,000,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Benzo(k)fluoranthene	NA	70,000	70,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Chrysene	170	70,000	70,000	10,000,000	380 U	1,600 U	1,520 U	1,190 U	1,520 U	38 U
Dibenzo(a,h)anthracene	33	700	700	300,000	380 U	1,600 U	1,520 U	1,190 U	1,520 U	38 U
Fluoranthene	420	1,000,000	1,000,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Fluorene	77	1,000,000	1,000,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Indeno(1,2,3-cd)pyrene	NA	7,000	7,000	3,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Naphthalene	180	4,000	500,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Phenanthrene	200	10,000	500,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Pyrene	200	1,000,000	1,000,000	10,000,000	757 U	3,180 U	3,030 U	2,380 U	3,030 U	38 U
Total Lead										
Lead, Total	130,000	200,000	200,000	6,000,000	34,200	42,600 U	39,000 U	30,000 U	75,400	66,000

1. Italic indicates analyte exceeds Revised Sediment Screening Values, Massachusetts Department of Environmental Protection, 2005.
2. Bold Indicates analyte exceeds Method 1 Soil Standards, 2019 Massachusetts Contingency Plan.
3. J indicates value is estimated and is above the laboratory method detection limit and below the laboratory reporting limit.
4. U indicated result is less than the laboratories reporting limit
5. * indicates estimated value due to laboratory quality control issues
6. ug/kg indicated microgram per kilogram
7. ND indicates not detected, laboratory detection limit unknown
8. ** indicates sample locaiton is unknown.
9. MD-COMP is a composite of MD-1, MD-2, MD-3, and MD-4

APPENDIX A

ECOLOGICAL RISK ASSESSMENT OF POLYCYCLIC AROMATIC HYDROCARBONS IN SEDIMENT: IDENTIFYING SOURCES AND ECOLOGICAL HAZARD

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Original Research

Ecological Risk Assessment of Polycyclic Aromatic Hydrocarbons in Sediments: Identifying Sources and Ecological Hazard

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ABSTRACT

Polycyclic aromatic hydrocarbons (PAHs) are nearly ubiquitous contaminants of freshwater and marine sediments. Sediment PAHs are derived from combustion of organic matter, fossil fuels, and biosynthesis by microbes. Pyrogenic PAHs, particularly those associated with combustion particles (soot), have a low accessibility and bioavailability in sediments. Polycyclic aromatic hydrocarbons associated with petroleum, creosote, or coal tar in sediments may have a moderate accessibility/bioavailability, particularly if the PAHs are part of a nonaqueous phase liquid (NAPL) phase that is in contact with sediment pore water. We present a method for estimating the hazard of complex PAH assemblage in sediments to benthic organisms. Concentrations of all PAHs in sediment pore water are estimated by an equilibrium partitioning model relative to concentrations in bulk sediment. Predicted log K_{oc} values can be used for predicting sediment/water partitioning of petrogenic PAH, but empirically derived log K_d values are needed to predict partitioning of pyrogenic PAH. A hazard quotient (HQ) for each PAH is calculated as the ratio of the estimated concentration in pore water to the chronic toxicity of the PAH determined by a log K_{ow}/toxicity model. Hazard quotients for all PAH in a sample are summed to produce a hazard index (HI), which is a measure of the worst-case estimated hazard of the sediment PAH to benthic organisms. The results of this study show that the integration of HI results with PAH source data provides insights into the causes of sediment toxicity that are useful in an ecological risk assessment.

Keywords: Petroleum Combustion PAH toxicity Bioavailability

INTRODUCTION

Polycyclic aromatic hydrocarbons (PAHs) are nearly ubiquitous trace contaminants of freshwater and marine sediments worldwide. They are being recognized with increasing frequency as major contributors to the hazard to aquatic life of contaminated sediments, particularly near areas of intense human activity (Neff 1979, 2002). Polycyclic aromatic hydrocarbons are composed of two or more fused benzene (aromatic) rings (Neff 1979). Aromatic rings are fused when they share two carbon atoms.

Polycyclic aromatic hydrocarbons almost never occur alone in sediments. They usually are present as complex mixtures of hundreds or even thousands of related compounds spanning a wide range of physical/chemical properties and toxicity to aquatic organisms. The composition of PAH assemblages in sediments varies widely depending on the sources of the PAH and the extent of natural degradative processes (called weathering) they have undergone since their release into the environment. A risk assessment for PAH-contaminated sediments requires an estimate of the toxicity to aquatic organisms of the complex PAH assemblage in the sediments. Sediment bioassays alone are often inadequate for identifying the chemicals that pose an ecological risk in sediments. This paper presents an approach to estimating the toxicity of PAH associated with marine and freshwater sediments based on principals of equilibrium partitioning theory (Di Toro and McGrath 2000; Rogers 2002; Hansen et al. 2003). The toxicity of a PAH assemblage in sediments depends on its composition and physical form, both of which depend on the sources of the PAH and on the relative concentrations of different PAH in the sediments. Therefore, an overview of the sources and compositions of the PAH assemblages found in sediments is included.

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SOURCES OF PAH IN SEDIMENTS

Polycyclic aromatic hydrocarbons in the environment may be derived from three sources: fossil fuels (petrogenic PAH), burning of organic matter (pyrogenic PAH), and transformation of natural organic precursors in the environment by relatively rapid chemical/biological (diagenic) processes (biogenic PAH) (Neff 1979, 2002). The biogenic PAH assemblages produced naturally (e.g., perylene, retene) are simple and usually do not contribute much to the total mass of PAH in sediments that have received inputs from anthropogenic sources.

Petrogenic PAH

A typical crude oil may contain from 0.2 to more than 7% total PAH. Most of the PAHs in petroleum are low molecular weight hydrocarbons containing two or three fused aromatic rings. Higher molecular weight PAHs, when present, usually are at low concentrations (usually less than 100 mg/kg ppm) (Kerr et al. 1999). Refined petroleum products contain the same PAHs as in the parent crude oil, as well as small amounts of PAHs produced by catalytic cracking and other refining processes (Neff et al. 1994; Stout et al. 2002a). The PAH assemblage in different refined oils varies depending on the distillation temperature range of the product. Gasoline contains mainly low molecular weight ali-

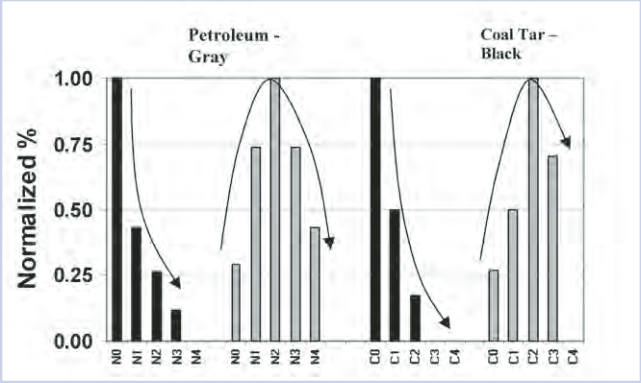

Figure 1. Typical alkyl PAH profiles for naphthalene (N0–N4) and chrysene (C0–C4) in petrogenic (petroleum) and pyrogenic (coal tar) PAH assemblages. From Neff (2002).

phatic, olefinic, and monocyclic aromatic hydrocarbons (e.g., benzene and toluene) and 2-ring PAHs (naphthalene and alkylnaphthalenes). Diesel fuels, home heating oils, and engine oils (crankcase oil; middle distillate fuels) may contain aromatic hydrocarbons from benzene through fluoranthene (four aromatic rings).

Many of the PAHs in petrogenic PAH assemblages contain one or more methyl, ethyl, butyl, or occasionally higher alkyl substituents on one or more of the aromatic carbons (Figure 1). As a general rule, these alkyl PAH are more abundant than the parent compounds in petroleum (Sporstøl et al. 1983; Stout et al. 2002a). Homologues with two to four alkyl carbons usually are more abundant than the less or more highly alkylated homologues (Figure 1).

Pyrogenic PAH

The major source of PAHs containing three or more aromatic rings in the environment is the combustion of organic matter (Neff 1979). During combustion, organic matter is heated to high temperatures, causing it to break up into smaller organic molecules and ultimately into carbon dioxide and water. If combustion is incomplete or the combusted fuel products cool quickly, the small organic chemicals may condense to form new chemicals, including PAH. Polycyclic aromatic hydrocarbons formed during combustion are called pyrogenic PAH, and they often are abundant in the vapor and particulate phases of engine exhaust. Two- and 3-ring PAH are most abundant in the vapor phase; 4- through 6-ringed PAHs often are more abundant in the particulate phase (soot) of engine exhaust or smoke (Neff 2002).

Pyrogenic PAH assemblages are complex, and, unlike the assemblages in petroleum, are dominated by 4-, 5-, and 6-ring PAHs. In pyrogenic PAH assemblages, the dominant compound in each homologous series is the unalkylated parent compound or a homologue with only one or two alkyl substituents (Sporstøl et al. 1983; Stout et al. 2001a). There is an inverse relationship between the temperature of formation and the abundance of alkyl carbons in a pyrogenic PAH assemblage (Neff 1979). The PAH assemblage in coal tar (a product produced by the high-temperature baking of hard coal in a reducing atmosphere to produce coke and manufactured gas) is typical of a high-temperature pyrogenic PAH assemblage (Figure 1). Subsequent distillation of coal (or other) tars alters the composition of the PAH assemblage according to boiling point, sometimes producing pyrogenic mixtures enriched in 2- and 3-ring PAH (e.g., creosote).

SOURCE ALLOCATION

Allocation

Most sediments contain a mixture of PAHs from several petrogenic and pyrogenic sources. It often is desirable or necessary to identify the sources of the PAH in order to identify potentially responsible parties (PRPs) for discharge/spill litigation, to design optimal strategies for source control and remediation, and to aid in characterizing the environmental hazard associated with the sediment contamination. Pyrogenic PAHs in sediments, particularly when they are associated with combustion soot, often are more persistent, less mobile and bioavailable, and less toxic (on a bulk sediment concentration basis) than petrogenic PAHs (Farrington and Westall 1986; Pastorok et al. 1994; Gustafsson et al. 1997). Thus, source identification should be part of any contaminated sediment site assessment.

Historically, the sediment PAHs of primary environmental concern have been the 16 listed on the U.S. Environmental Protection Agency (U.S. EPA) priority pollutant list and similar lists in other countries. However, it has become increasingly evident in recent years that hundreds of PAHs between naphthalene (molecular weight 128.2) and coronene (molecular weight 300.4) are present in environmental matrices that have become contaminated with petrogenic or pyrogenic PAH at concentrations high enough to be of environmental concern (Neff 2002; Barron and Holder 2003). Coronene (log K_{ow}, 6.75, aqueous solubility, 0.14 µg/L) is the highest molecular weight PAH with sufficient environmental mobility to be of potential environmental concern. None of the U.S. EPA priority pollutant PAHs are alkylated; all are unalkylated parent PAHs. However, as discussed above, the most abundant PAH in petrogenic PAH assemblages are alkyl PAHs. Thus, analysis of just 12 to 20 PAHs in sediment samples, as is done for many contaminated site assessments, may be inadequate for providing data needed to identify PAH sources and ecological hazard in the sediments, particularly if they are contaminated primarily with petroleum hydrocarbons.

For source identification, extracts of the nonpolar organic fraction in sediments should be analyzed by a capillary column gas chromatographic method and analyte peaks in the chromatogram identified and quantified by mass spectrometry operated in the selected ion monitoring mode. This analytical method represents a modification of U.S. EPA Method 8270 (Stout et al. 2002a, 2002b). In the modified method, the gas chromatography is operated with a slow oven temperature increase program to optimize separation of target compounds. The mass spectrometer is operated in the selected ion monitoring mode to minimize interferences from nontarget compounds and, when necessary, to improve detection limits for analytes present at low concentrations. The mass spectrometer/selected ion monitoring should target ions of the parent and alkyl PAH analytes of interest. Usually, between 40 and 50 analytes or analyte groups are analyzed, including parent compounds from naphthalene to benzo[*ghi*]perylene and C_1- through C_4-alkyl congener groups for naphthalene, fluorene, phenanthrene/anthracene, fluoranthrene/pryrene, and chrysene. Heterocyclic compounds such as dibenzothiophene (a sulfur-containing heterocyclic compound) and their alkyl homologue groups also may be included on the analyte list, particularly when sediments are suspected to contain a substantial contribution of petrogenic PAHs. It is extremely

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Table 1. Ratios of the PAH isomers phenanthrene to anthracene (PH/AN) and fluoranthene to pyrene (FL/PY) in PAH assemblages from several sources

Source	PH/AN	FL/PY	Reference
Primarily pyrogenic sources			
Coke oven emissions	1.27–3.57	0.76–1.31	Maher and Aislabe 1992
Iron/steel plant (soot)	0.24	0.62	Yang et al. 2002
Iron/steel plant (flue gas)	0.06	1.43	Yang et al. 2002
Wood-burning emissions	6.41	1.26	Page et al. 1999
Auto exhaust soot (gasoline)	1.79	0.90	O'Malley et al. 1996
Diesel engine soot	0.06	1.26	Bence et al. 1996
Diesel exhaust particles (n = 22)	1.3–78	0.25–1.38	Sjøgren et al. 1996
Highway dust	4.7	1.4	Christensen et al. 1999
Urban runoff	0.56–1.47	0.23–1.07	Stout et al. 2001a
Creosote	0.11–4.01	1.52–1.70	Neff 2002
Coal tar	3.11	1.29	Neff 2002
Coke	0.24	1.49	S.A. Stout (unpublished data)
Creosote-contaminated sediment in Table 5	0.34	1.59	Stout et al. 2001a
Urban sediment in Table 5	0.22	0.79	Stout et al. 2001a
Primarily petrogenic sources			
60 crude oils (mean)	52.0	0.25	Kerr et al. 1999
Australian crude oil	>370[a]	0.78	Neff et al. 2000
Italian crude oil	>232[a]	0.08	Neff et al. 1998
Alaska crude oil	>262[a]	0.2	Bence et al. 1996
Diesel fuel (No. 2 fuel oil)	>800[a]	0.38	Bence et al. 1996
No. 4 fuel oil	11.8	0.16	S.A. Stout (unpublished data)
Bunker C residual fuel oil	14.8	0.14	S.A. Stout (unpublished data)
Road paving asphalt	20	<0.11[a]	Kriech et al. 2002
West Virginia coal (2 samples)	11.2, 27.9	0.95, 1.03	Neff and Sauer 1993

[a]Anthracene or fluoranthene concentration was below the detection limit.

important that the analyses adhere to strict data quality objectives to assure optimal precision, accuracy, specificity, and sensitivity (Boehm et al. 1997). Poor data quality will hamper the ability to accurately identify PAH sources in sediments. Detailed descriptions of these methods can be found elsewhere (Page et al. 1995; Douglas et al. 1996; Stout et al. 2002a, 2002b).

The differences in ratios of parent to alkyl-substituted PAH congeners can be used to distinguish between petrogenic and various types of pyrogenic PAH assemblages in environmental samples (Bence et al. 1996; Douglas et al. 1996; Zeng and Vista 1997; Stout et al. 2000). If only priority pollutant PAH data are available, ratios of phenanthrene to anthracene (PH/AN) and fluoranthene to pyrene (FL/PY) are useful for differentiating between sediment PAH assemblages containing primarily pyrogenic or petrogenic PAHs (Table 1). Anthracene and fluoranthene are thermodynamically less stable than their isomers, phenanthrene and pyrene, respectively (Baumard et al. 1998). Anthracene and fluoranthene are produced during rapid, high-temperature pyrosynthesis, but are less favored to persist during the slow organic digenesis leading to the generation of fossil fuels. Thus, the PH/AN ratio of pyrogenic PAH assemblages usually is less than 5 and the petrogenic ratio usually is greater than 5 (Table 1). The FL/PY ratio usually approaches or exceeds a value of 1 in pyrogenic assemblages and usually is substantially less than a value of 1 in petrogenic PAH assemblages. Because of the extreme variability in these ratios in PAH assemblages from different sources, and in the absence of additional alkyl PAH and other chemical "fingerprint" data, at a minimum, both ratios should be used to aid in differentiating between petrogenic and pyrogenic PAH in sediments. A plot of PH/AN (y axis) against FL/PY (x axis) for PAH assemblages from different single and mixed sources produces a distribution with a negative slope. Samples containing primarily petrogenic PAHs are clustered in the upper left side of the graph; data points distribute toward the lower right as the fraction of total PAH that is pyrogenic increases.

Several other diagnostic ratios can be used to help distinguish between petrogenic and pyrogenic PAH assemblages in sediments. Because alkyl PAHs are more abundant than the unalkylated parent PAHs in petrogenic PAH assemblages and are less abundant in pyrogenic PAH assemblages, ratios of selected primarily petrogenic alkyl PAHs to selected pri-

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Table 2. Fluoranthene plus pyrene to sum of C_2- to C_4-phenanthrenes (FLPY)/(FLPY + C_2- to C_4-phenanthrenes [C24PH]) ratios in different types of petrogenic and pyrogenic PAH assemblages. Most data are from the Battelle PAH Forensics database

Material	No. of samples	Mean ratio	Ratio range
Petrogenic sources			
Crude oils	22	0.015	0–0.044
#2 Fuel oil/diesel	25	0.044	0.008–0.073
#6 Fuel oil/bunker C	43	0.050	0.028–0.143
IBF-380 heavy fuel	17	0.048	0.018–0.057
Gasoline	12	0.105	0–0.174
Coal	21	0.099	0.021–0.320
Pyrogenic sources			
Soot	2	0.821	0.731–0.909
Creosote	9	0.814	0.387–0.975
Coal tar	15	0.922	0.838–0.983

marily pyrogenic parent PAHs provide a good indication of PAH source (Sporstøl et al. 1983). The ratios of methylphenanthrenes to phenanthrene, total methyl-fluoranthenes/pyrenes to fluoranthene/pyrene, and total methylchrysenes to chrysene are the ratios most frequently used (Gustafsson et al. 1997; Zeng and Vista 1997; Pereira et al. 1999; Stout et al. 2001a, 2001b). Although they may be affected by preferential weathering of the parent PAH, these ratios usually are greater than a value of 1 in petrogenic PAH assemblages and less than a value of 1 in pyrogenic assemblages.

The ratio of fluoranthene plus pyrene (FLPY) to the sum of C_2- to C_4-phenanthrenes (C24PH), expressed as FLPY/(FLPY + C24PH) such that values range from 0 to 1, has been effective in differentiating between petrogenic and pyrogenic PAH assemblages in sediments and biological samples from Prince William Sound, (AK, USA) which was the site of the 1989 *Exxon Valdez* oil spill (Neff et al. 2004). Petrogenic PAH assemblages nearly always have a FLPY/(FLPY + C24PH) ratio less than 0.1, whereas the ratio in pyrogenic PAH assemblages usually is more than 0.75 (Table 2). Gasoline may have a higher ratio, because it contains only traces of fluoranthene, pyrene, and more highly alkylated phenanthrenes.

More elaborate fingerprinting methods are required for distinguishing among multiple petrogenic sources in sediments (Boehm et al. 1997; Stout et al. 2002b; Neff et al. 2004). Within each alkyl homologue group, alkyl phenanthrenes, dibenzothiophene, and chrysene tend to weather at the same rates and are fairly persistent in contaminated sediments (Douglas et al. 1996; Boehm et al. 1997). The concentrations and relative abundances of different alkyl-PAHs vary widely in crude and refined petroleum from different sources. Thus, alkyl-PAH ratios are useful for identifying PAH assemblages from different petrogenic sources in sediments (Boehm et al. 1997; Burns et al. 1997; Stout et al. 2002a). For example, ratios of total C_2-dibenzothiophenes to total C_2-phenanthrenes (DT2/PH2) and of the trimethyl homologues (DT3/PH3) were particularly useful for distinguishing among sediment PAH from North Slope crude oil (the oil released in the *Exxon Valdez* oil spill) and from other petrogenic sources (seep oil, weathered petroleum tar, diesel fuel) in spill path areas of Prince William Sound (Page et al. 1996; Boehm et al. 1997). If the sediment PAH data are graphed in double-ratio plots (e.g., DT2/PH2 vs DT3/PH3), the PAH assemblages from different petrogenic sources cluster separately, often allowing clear differentiation among multiple sources (Brown and Boehm 1993; Boehm et al. 1997).

Higher resolution in the source allocation can be obtained by a comprehensive statistical analysis of the complete PAH profile and diagnostic ratios. One such statistical method is principal component analysis (PCA). The principal component analysis is one of several types of ordination techniques, also known as factor analyses, by which multivariate data sets are explored, reduced, interpreted, and/or studied further (Wold et al. 1987). PCA is used in many types of studies and has been applied to PAH fingerprinting and allocation studies (Boehm et al. 1997; Burns et al. 1997; Naes and Oug 1998; Stout et al. 2001a).

Principal component analysis is an exploratory statistical technique that produces a visual comparison among sediment samples and suspected source materials (e.g., petroleum products from suspected sources, pyrogenic emissions from local point and nonpoint sources, coal tar, and creosote). Figure 2 shows a PCA plot for sediments from an urban waterway in which three sources of PAHs were recognized, namely natural background (arising from preindustrial, natural forest fires); urban runoff; and creosote (from a former tar distillation facility on the waterway) (Stout et al. 2001a, 2002b). Many sediment samples from this urban waterway contained PAHs primarily from one of these three end-members. These "single-source" samples tend to plot as clusters at or near the apices of the trends revealed by the PCA factor score plot. Several other sediments tended to plot in locations intermediate between the three end-members, indicating that they contain a mixture of PAHs from two or three of the sources. Spatial relationships among samples on a PCA score plot can be used to estimate or determine the proportions of each end-member in each sediment sample. Additional calculations involving spatial distributions, concentrations, and volumes of PAH-contaminated sediments from each contaminant source in the study can be used to allocate contributions among the three end-member sources.

Sources

Petrogenic PAHs enter freshwater and marine environments from natural oil seeps; erosion of coal, peat, and oil

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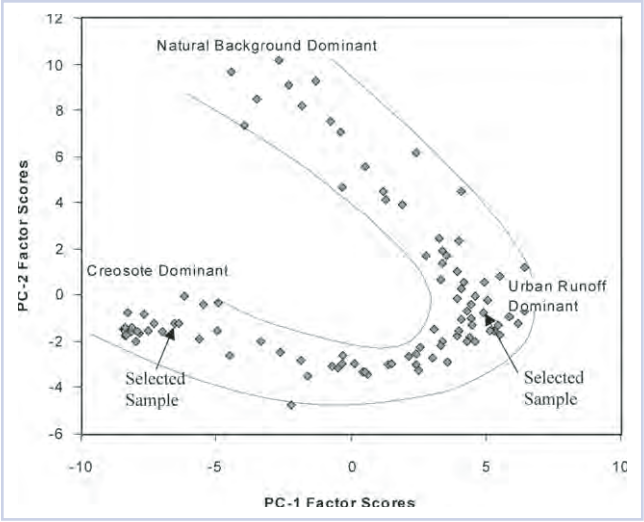

Figure 2. Principal component analysis (PCA) factor score plot for sediment PAH data from a contaminated estuary. The PCA identified three dominant PAH sources (natural background, urban runoff, and creosote). Samples falling between the apices contain a mixture of PAH from these sources. From Stout et al. (2001a, 2002b).

shale deposits; oil and coal spills; discharges of treated and untreated ballast and bilge water from ships; and effluents from oil refineries, oil/water separators on oil production platforms, coal-fired power plants, storm water runoff, and municipal sewage treatment plants (NAS 2002; Neff 2002).

A great many domestic and industrial activities, as well as natural events such as forest fires, produce PAH by pyrolysis/pyrosynthesis. Pyrosynthesized PAH may be released to the environment in airborne particles or in the solid or aqueous byproducts of the pyrolysis process. Burning of fossil fuels is an important source of pyrogenic PAHs in the environment. The particulate fractions of exhaust from gasoline and diesel-powered vehicles contain 16 to 2,300 µg/g total 4- through 6-ringed PAHs (Takada et al. 1991; Oda et al. 1998). Nearly all the PAHs derived from vehicular exhaust are deposited within about 50 m of roads (Harrison and Johnston 1985; Hewitt and Rashed 1990). Much of the deposited PAHs, however, find their way to water bodies in surface runoff from land (Hoffman et al. 1984; Sharma et al. 1994).

Several industrial processes, such as coal coking (Lao et al. 1975); carbonization of coal and oil to produce manufactured gas, coal tars, carbon black, and pitch (Villaume 1984; Merrill and Wade 1985; Mueller et al. 1989); catalytic cracking of petroleum feed stocks to produce refined petroleum products (Stout et al. 2001b); manufacture of iron and steel (Yang et al. 2002); and aluminum smelting (Thrane 1987; Näf et al. 1994) produce airborne particulates and solid wastes containing high concentrations of PAH. Coking of coal produces an estimated emission of about 40 mg of benzo[*a*]pyrene (a carcinogenic PAH) per ton of coke produced (Eisenhut et al. 1990). Polycyclic aromatic hydrocarbon–contaminated wastes and discharges from these industries may reach freshwater and marine environments in wastewater effluents and in deposition of airborne vapor-phase or particulate PAH. For example, an estimated 10 t of PAHs were discharged to the sea from seven Norwegian aluminum smelters in 1992, down from 42 t in 1988 (Knutzen 1995).

ESTIMATION OF THE TOXICITY OF PAH IN SEDIMENTS

Concentration of PAH in sediment pore water

Polycyclic aromatic hydrocarbons in solution in ambient water or pore water of sediments are much more bioavailable and toxic than those adsorbed to particles (particularly combustion soot) (Gustafsson et al. 1997) or associated with a nonaqueous phase liquid (NAPL; e.g., petroleum, creosote, or coal tar) (Pastorok et al. 1994). The dissolved phase of PAHs in sediments can be estimated based on equilibrium partitioning theory (Hansen et al. 2003).

Nonpolar organic chemicals, such as PAHs, have low aqueous solubilities and high affinities for adsorption to sediment and organic particles and absorption (bioconcentration) by living organisms (Neff 2002). Most of the higher molecular weight pyrogenic PAHs entering aquatic environments are sorbed to soot (the particulate fraction of smoke and engine exhaust). Petrogenic lower molecular weight PAHs may enter the water from the vapor phase in rainfall or dry fallout. They quickly adsorb to the organic phase of suspended particles and are deposited with them in sediments (Neff 2002).

Petrogenic PAHs from petroleum and pyrogenic PAHs from creosote and coal tar in sediments may be complexed with the colloidal and particulate organic fraction of sediment or associated with a NAPL, an oil phase, or an oil coating on sediment particles. Because the affinity of hydrocarbons is higher for the oil phase than for the sediment organic matter and sediment porewater phases, partitioning of hydrocarbons into sediment porewater is controlled primarily by the affinity of the hydrocarbons for the NAPL phase (Zemanek et al. 1997). Thus, in estimating the partitioning of PAHs between the NAPL phase (petroleum, coal tar, creosote) and dissolved phase, PAH concentration should be normalized to some measure of total hydrocarbons.

The PAHs in sediments are distributed between the dissolved (porewater) and particulate and NAPL phases of the sediment according to their relative affinities for the three phases. This distribution can be expressed as an organic carbon/water partition coefficient (K_{oc}) or an oil/water partition coefficient (K_{oil}) (Lee et al. 1992a; Neff and Sauer 1995; Di Toro and McGrath 2000; Hansen et al. 2003). Both partition coefficients are similar to the octanol/water partition coefficient (K_{ow}) that is used frequently to model bioconcentration of nonpolar organic compounds from water by aquatic animals (Connell 1993; Neff 2002). The K_{oc} for most nonpolar organic chemicals and colloidal/particulate organic matter in sediments is lower than the K_{ow} (Karickhoff 1981; Di Toro et al. 1991; Neff 2002), whereas the K_{oil} for PAHs in most refined petroleum products and liquid coal tars is about the same as or higher than the K_{ow} and tends to increase with average molecular weight of the NAPL material (Shiu et al. 1990; Lee et al. 1992a, 1992b).

However, high molecular weight, petrogenic PAHs in coal particles and asphalt, pyrogenic PAHs in soot or coal tar, and related viscous liquids often are bound to sediment particles more strongly than predicted by equilibrium partitioning theory. Mitra et al. (1999) reported high, invariant log K_{oc}s for PAHs in sediments from the Elizabeth River (VA, USA), which is heavily contaminated with creosote-contaminated wood particles. Polycyclic aromatic hydrocarbons in sediments of urban estuaries—such as the Tamar River (UK) (Readman et al. 1987); Boston Harbor (MA, USA)

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Table 3. Log K_{ow}, freshwater solubility, and estimated acute and chronic toxicity of PAH frequently found in crude and refined petroleum. Solubility and toxicity values are micrograms per liter (µg/L ppb). Log K_{ow} values and solubilities are from Mackay et al. (1992), Neff and Burns (1996), and Ran et al. (2002)

PAH	Log K_{ow}	Freshwater solubility	Acute toxicity	Chronic toxicity
Naphthalene	3.37	33,720	4,870	970
C_1-Naphthalenes	3.87	27,160	1,420	284
C_2-Naphthalenes	4.37	4,725	410	81
C_3-Naphthalenes	4.90	2,100	130	17
C_4-Naphthalenes	5.55	NV[a]	42	4.1
Biphenyl	3.95	7,728	1,420	250
Acenaphthylene	4.07	16,688	1,181	180
Acenaphthene	3.92	16,908	1,360	270
Dibenzofuran	4.12	4,225	860	135
Fluorene	4.18	2,045	730	150
C_1-Fluorenes	4.97	1,090	96	19
C_2-Fluorenes	5.2	NV	56	11
C_3-Fluorenes	5.5	NV	16	5.3
Anthracene	4.54	79.6	300	60
Phenanthrene	4.46	1,100	367	55
C_1-Phenanthrenes	5.14	272	64	13
C_2-Phenanthrenes	5.51	NV	26	5.1
C_3-Phananthrenes	6.0	NV	7.4	1.5
C_4-Phenanthrenes	6.51	NV	2.0	0.40
Dibenzothiophene	4.49	1,136	350	70
C_1-Dibenzothiophenes	4.86	NV	140	28
C_2-Dibenzothiophenes	5.5	NV	27	5.4
C_3-Dibenzothiophenes	5.73	NV	16	3.1
Fluoranthene	5.22	261	55	11
Pyrene	5.18	134	61	12
C_1-Fluoranthenes/pyrenes	5.72	NV	15	3.1
Benz[*a*]anthracene	5.91	14.7	9.8	2.0
Chrysene	5.86	6.0	11	2.2
C_1-Chrysenes	6.42	62.2	2.7	0.53
C_2-Chrysenes	6.88	25.0	0.8	0.16
C_3-chrysenes	7.44	NV	0.2	0.04
C_4-Chrysenes	8.0	NV	0.06	0.01
Benzo[*b*]fluoranthene	5.8	4.1	14	2.9
Benzo[*k*]fluoranthene	6.0	0.8	8.6	1.7
Benzo[e]pyrene	6.04	4.0	7.6	1.5
Benzo[*a*]pyrene	6.04	1.4	7.6	1.5
Perylene	6.25	0.4	4.3	0.86
Indeno[1,2,3-*cd*]pyrene	7.0	6	0.64	0.13
Dibenz[*a*,*h*]anthracene	6.75	0.5	1.3	0.25
Benzo[*ghi*]perylene	6.5	0.3	2.4	0.49

[a] NV = No solubility value could be found.

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(McGroddy and Farrington 1995); and San Francisco Bay (CA, USA) (Maruya et al. 1996)—often are more tightly bound to sediment particles (have higher log K_{oc}s) than predicted. The desorption rate of PAHs from sediments decreases with duration of sediment contamination (Kraaij et al. 2002). Polycyclic aromatic hydrocarbons also are tightly bound to coal (Ghosh et al. 2001). These tightly bound PAHs do not partition effectively into the aqueous phase of porewater.

The use of K_{ow} or K_{oc} tends to overestimate concentrations of dissolved PAHs in porewater of sediments contaminated primarily with pyrogenic PAHs but should give a reasonable upper-limit estimate of dissolved-phase PAHs in porewater of petroleum-, creosote-, or coal tar–contaminated sediments if the oil or other NAPL phase is still liquid and in physical contact with sediment porewater. The NAPL, particularly if it is crude oil or coal tar, may develop a surface "skin" of resins-asphalthenes or other high molecular weight polar compounds, decreasing NAPL/water partitioning (Ghoshal et al. 2004). A NAPL or oil-filled pores also may substantially decrease the permeability of the soil or sediment, decreasing the effective NAPL/water interface and limiting accessibility of the PAH to partitioning into sediment porewater. Empirically determined K_d (particle/water partition coefficients) are best for estimating sediment/water partitioning of pyrogenic PAHs or PAHs from weathered crude oil.

Values for the octanol/water partition coefficient (K_{ow}) have been published for a large number of PAHs (Mackay et al. 1992; Durell et al. 2004). The most accurate current values for log K_{ow} for several PAHs of environmental concern are summarized in Table 3. K_{oc} can be estimated from K_{ow} (Karickhoff et al. 1979), but K_d must be determined empirically on a site-specific basis. The concentration of a PAH in sediment porewater in equilibrium with its concentration in the bulk sediment can be estimated by the simple equation

$$C_w = C_s/K_x \quad (1)$$

where C_w is the concentration of the PAH in solution in sediment porewater, C_s is the concentration of the PAH in bulk sediment (measured as concentration per unit mass of sediment organic carbon or concentration per unit mass of total petroleum hydrocarbons [TPH]), and K_x is the sediment organic matter/water partition coefficient (K_{oc}) or sediment particle/water partition coefficient (K_p) for the PAH. The K_p for pyrogenic PAHs associated primarily with combustion soot requires a variation on Equation 1 to account for the high affinity of soot particles for PAHs (Bucheli and Gustafsson 2000; Cornelissen and Gustafsson 2004).

Concentrations of individual PAHs in bulk sediment, expressed as µg/g dry sediment, should be normalized to the concentration of total extractable (C_8+) petroleum hydrocarbons (TPH) in sediments, determined by gas chromatography/flame ionization detection (Sauer and Boehm 1995), if the source of the PAHs in sediments is primarily petroleum. If the PAHs in the sediment are primarily pyrogenic, then concentrations of PAHs should be normalized to sediment total organic carbon if the sediments contain high concentrations (several percent) of particulate organic matter or if a pyrogenic NAPL (e.g., creosote or coal tar) is present. TPH or total extractable organic matter often is the best parameter for normalizing PAH concentrations in urban or industrial sediments, even when the PAHs are primarily from pyrogenic sources because the total extractables analysis quantifies mainly the nonpolar organic fraction in bulk sediment that often is the most important in adsorbing PAHs. This calculation is repeated for all PAHs analyzed in sediment and is the basis for an estimate of the maximum concentration of total PAHs in solution in sediment porewater. Where the estimated concentration of a PAH exceeds its aqueous solubility, the aqueous solubility is used as the water concentration.

Toxicity of dissolved PAH mixtures to aquatic organisms

A search of the U.S. EPA Toxicity Information Retrieval (USEPA 1997) database identified more than 300 values for the acute toxicity (median lethal concentration, LC50) of aromatic hydrocarbons to freshwater and marine invertebrates and fish. The search excluded LC50 concentrations greater than the aqueous solubility of the particular hydrocarbon. Suitable aquatic toxicity data were found for 25 aromatic hydrocarbons, including 14 PAHs (Table 4). Log geometric mean acute toxicity values (in mM/L) for the aromatic hydrocarbons were regressed against log K_{ow}. The regression has a high correlation ($r^2 = 0.885$) and the form

$$\log \mathrm{LC50(mM/L)} = -1.162 \log K_{ow} + 2.496 \quad (2)$$

This equation was used to estimate the acute toxicity of each of the PAHs analyzed in sediment (Table 3). Equation 2 is similar to that developed by McCarty et al. (1992) to estimate the toxicity to freshwater fish of a large number of nonpolar organic compounds. Equation 2 considers toxicity data for freshwater and marine invertebrates and fish and applies only to aromatic hydrocarbons.

The chronic toxicity of each PAH was estimated by dividing the acute value by an acute/chronic ratio of 5. An acute/chronic ratio of 5 represents a conservative estimate of the acute/chronic ratio for aromatic hydrocarbons. For example, Suter and Rosen (1988) evaluated the comparative acute and chronic toxicity of several chemicals to marine fish and crustaceans. Acute/chronic ratios for aromatic hydrocarbons calculated from their data are between 2 and 4.

The estimated concentration of each PAH in solution in sediment porewater was divided by its chronic toxicity value to derive a HQ. Hazard quotients for all of the PAHs detected in sediment were summed to produce a HI for total PAHs:

$$\mathrm{HQ} = (\mathrm{PAH})_{sol}/\text{chronic value} \quad (3)$$

$$\mathrm{HI} = \Sigma \mathrm{HQ} \quad (4)$$

Equations 3 and 4 are based on the reasonable assumptions that the dissolved PAHs are much more bioavailable and toxic than adsorbed PAHs (Neff 2002) and the toxicities of individual PAHs in a mixture in solution are additive (Warne et al. 1989; Di Toro and McGrath 2000; Hansen et al. 2003; Landrum et al. 2003).

Toxicity of PAH assemblages in sediments

Log K_{ow} values for the PAHs most frequently analyzed in freshwater and marine sediments increase with molecular weight from 3.37 for naphthalene to 8.0 for C_4-chrysenes (Table 3). Log K_{oc} values estimated by the log K_{oc}/log K_{ow} regression of Karickhoff (1981) are slightly lower than the log K_{ow} values in Table 3, ranging from 2.94 for naphthalene to 6.68 for benzo[*ghi*]peylene. Values for log K_{oil}, based on the regression of Lee et al. (1992a) for diesel fuel PAHs, are slightly higher than the log K_{ow} values, ranging from 3.81

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Table 4. Geometric mean toxicity (LC50 with 48-h or longer exposure) for PAH, based on available data from the AQUIRE database (USEPA 1997)

Chemical	Geomean LC50 (µg/L)	Chemical	Geomean LC50 (µg/L)
Naphthalene	2,140	Phenanthrene	166
1-Methylnaphthalene	4,220	Anthracene	36
2-Methylnaphthalene	1,130	9-Methylanthracene	125
1,3-Dimethylnaphthalene	1,700	Fluoranthene	69
Acenaphthene	1,640	Pyrene	91
Biphenyl	2,110	Benz[*a*]anthracene	10
Fluorene	818	Benzo[*a*]pyrene	5

for naphthalene to 6.72 for benzo[*ghi*]perylene. The actual value of log K_{oil} varies with the "average molecular weight" of the oil and, therefore, is different for different crude and refined petroleum products and changes with oil weathering (Lee et al. 1992a, 1992b; Shiu et al. 1990). The value of log K_{oil} for a particular PAH decreases as the average molecular weight and density of the bulk oil increases, in agreement with Raoult's Law (Lane and Loehr 1995). Thus, K_{ow} is a reasonable, conservative coefficient to use for estimating the dissolved concentrations of PAHs associated with sediments, most of which contain both weathered petrogenic and pyrogenic PAHs. The use of log K_{ow} may result in approximately 2-fold under- or overestimation of the true concentration of a PAH in solution in equilibrium with the NAPL phase (Shiu et al. 1988).

Polycyclic aromatic hydrocarbon solubility in freshwater decreases with increasing PAH molecular weight (Table 3). The solubility of some alkyl-PAHs is greater than that of the parent PAH, possibly reflecting steric effects of the alkyl carbons. Solubility tends to decrease with increasing seawater salinity and decreasing water temperature (Neff 2002). For example, the solubility of phenanthrene in fresh and salt water at 25°C is 1,080 and 644 µg/L, respectively (Eastcott et al. 1988). The solubility of anthracene in freshwater decreases from 56.5 µg/L at 29.1°C to 15.5 µg/L at 8.9°C (Reza et al. 2002). At all salinities and temperatures, anthracene is much less soluble than its isomer, phenanthrene. These physical properties of PAH affect their bioavailability and toxicity to freshwater and marine organisms.

The measured acute toxicity of aromatic hydrocarbons increases (LC50 decreases) with increasing PAH molecular weight and log K_{ow} (Table 4; Hansen et al. 2003) The estimated acute toxicity values follow the same trend (Table 3). Estimated chronic values for PAHs range from 970 µg/L (ppb) for naphthalene to 0.01 ppb for C_4-chrysenes (Table 3). For anthracene and PAHs with molecular weights of 228.3 (chrysene and benz[*a*]anthracene) or higher, the acutely lethal concentration approaches, or is higher than, the single phase aqueous solubility. Saturated solutions of these highly nonpolar PAHs are not acutely toxic to aquatic organisms.

We selected sediment PAH data from a recent study of the sources of PAHs in sediments of the Wycoff/Eagle Harbor Superfund site in the state of Washington, USA, to demonstrate the method described above for estimating the aquatic toxicity, measured as HI, of sediment-bound PAHs (Table 5). Two sediment samples from Eagle Harbor in Puget Sound were used, one heavily contaminated with creosote and the other contaminated with PAHs from urban runoff and deposition of pyrogenic PAHs from combustion sources. The PAH data for the two sediment samples used in this example are plotted in the PCA plot for the site data (Figure 2) and show that one sample has a clear creosote signature and the other has a clear urban runoff signature.

The creosote-contaminated sediment contained 27,441 µg/g (ppm) of TPH and 17,283 ppm of total PAH. The urban runoff sediment contained 212 ppm of TPH and 25 ppm of total PAH. Total PAH concentrations were much higher than the "high" value reported in the National Status and Trends database of 2.18 ppm of total PAH (24 parent PAH and alkyl homologue groups in sediments) (Daskalakis and O'Connor 1995), indicating that sediments from Eagle Harbor were highly contaminated with PAHs. Daskalakis and O'Connor (1995) identified Eagle Harbor as the location of some of the most heavily contaminated sediments in Puget Sound.

The sediment PAH concentrations were normalized to TPH concentration for calculation of HIs. TPH-normalized PAH concentrations were 629,808 µg PAH/g TPH and 115,655 µg/g in the creosote-contaminated and urban runoff–contaminated sediments, respectively. Estimated concentrations of total PAH in solution in sediment porewater in equilibrium with the two sediments were 17,190 µg/L (ppb) and 10,216 µg/L, respectively (Table 5). However, estimated concentrations of several PAHs in solution in water in equilibrium with the creosote-contaminated sediment were in excess of their single-phase aqueous solubilities (Table 3). Actual concentrations of these PAHs in solution in sediment pore water would not exceed their aqueous solubilities. Therefore, the aqueous solubilities of these PAHs were used as the exposure concentrations.

The estimated concentration of each PAH in solution was divided by its chronic toxicity value (Table 3) to obtain an HQ. The HQs for the PAHs in the creosote-contaminated sediment pore water ranged from 0.1 to 32.1 (C_4-phenanthrenes). The sum of HQs (the HI) for this sediment was 250.

The estimated concentration of only benzo[*a*]pyrene in solution exceeded its water solubility for the urban runoff sediment sample. The difference was small, so no adjustment was necessary. Estimated HQs for PAH in the urban runoff–contaminated sediment porewater ranged from 0.1 to 6.9 (naphthalene), and the estimated HI was 64.

An HI value greater than 1 indicates that the porewater contains in solution a concentration of total PAHs in excess of its estimated chronic toxicity to aquatic animals (Ozretich et al. 2000). Both sediments had HIs substantially greater than 1, suggesting that both sediments would be toxic to the benthic fauna of Eagle Harbor.

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Table 5. Hazard quotients (HQ) and hazard indices (HI) for two sediment samples collected from Eagle Harbor, Washington, USA. The weathered creosote-contaminated sediment contained 17,283 μg/g dry wt (ppm) total polycyclic aromatic hydrocarbons (PAH) and 27,441 ppm total petroleum hydrocarbons (TPH). The sediment sample contaminated with urban runoff/fallout PAH contained 25 ppm total PAH and 212 ppm TPH. Concentrations in parentheses are freshwater solubilities. PAH data from Stout et al. (2001a)

	Creosote-contaminated sediment (27,441 μg TPH/g sediment)			Sediment contaminated with urban runoff PAH (212 μg TPH/g sediment)		
PAH	Sediment (μg/g TPH)	Water (μg/L)	HQ	Sediment (μg/g TPH)	Water (μg/L)	HQ
Naphthalene	2,931	1,250	1.3	15,762	6,720	6.9
C_1-Naphthalenes	4,712	636	2.2	6,629	890	3.2
C_2-Naphthalenes	13,135	560	6.9	3,527	150	1.9
C_3-Naphthalenes	11,212	112	6.6	1,506	15	0.9
C_4-Naphthalenes	4,684	13	3.2	423	1	0.3
Biphenyl	689	77	0.3	1,763	200	0.8
Acenaphthylene	495	42	0.2	459	39	0.2
Acenaphthene	41,226	4,960	18.3	6,615	800	2.9
Dibenzofuran	20,988	1,290	9.6	6,487	400	3.0
Fluorene	48,290	3,190	21.8	6,438	420	2.9
C_1-Fluorenes	11,249	120	6.3	1,254	13	6.8
C_2-Fluorenes	7,294	46	4.2	603	4	0.4
C_3-Fluorenes	3,637	12	2.2	650	2	0.4
Anthracene	11,280	325 (80)	(1.3)	1,480	43	0.7
Phenanthrene	3,888	100	1.9	327	9	0.2
C_1-Phenanthrenes	2,506	18	1.4	240	2	0.1
C_2-Phenanthrenes	630	2	0.4	161	0.5	0.1
C_3-Phenanthrenes	187	0.2	0.1	95	0.1	0.1
C_4-Phenanthrenes	41,597	13	32.1	4,556	1	2.5
Dibenzothiophene	86,458	2,800 (1,140)	(16.3)	10,442	340	4.8
C_1-Dibenzothiophenes	29,735	410	14.7	2,736	38	1.4
C_2-Dibenzothiophenes	16,779	53	9.8	1,351	4	0.8
C_3-Dibenzothiophenes	5,736	11	3.5	629	1	0.4
Fluoranthene	101,012	609 (260)	(23.6)	6,168	37	3.4
Pyrene	63,521	420 (130)	(10.8)	7,808	52	4.3
C_1-Fluoranthenes/pyrenes	25,471	49	15.7	3,725	7	2.3
Benz[*a*]anthracene	14,934	18 (15)	(7.5)	1,996	2	1.3
Chrysene	15,693	22 (6)	(2.7)	4,022	6	2.5
C_1-Chrysenes	6,826	3	4.9	1,725	0.7	1.2
C_2-Chrysenes	1,842	0.2	1.5	489	0.1	0.6
C_3-Chrysenes	295	0.01	0.3	197	0	0
Benzo[*b*]fluoranthene	4,474	7	2.4	2,972	5	1.6
Benzo[*k*]fluoranthene	5,233	5	3.1	2,596	3	1.8
Benzo[e]pyrene	3,002	3	1.8	1,974	2	1.2
Benzo[*a*]pyrene	4,210	4 (1)	(0.7)	1,867	2 (1)	(0.7)
Perylene	863	0.5	0.6	1,369	0.8	0.1
Indeno[1,2,3-*cd*]pyrene	857	0.1	0.7	928	0.1	0.7
Dibenzo[*a,h*]anthracene	590	0.1	0.4	253	0.04	0.2
Benzo[*ghi*]perylene	809	0.3	0.5	847	0.3	0.6
Total PAH	629,808	17,190		115,655	10,216	
HI			250			64

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Sediment quality guidelines, based on toxicity to sediment-dwelling marine animals, have been developed for total PAH in marine sediments (Long et al. 1995). The effects range low (ERL) and effects range median (ERM) concentrations for total PAH are 4.022 µg/g dry wt and 44.792 µg/g, respectively. The ERL is the concentration in bulk sediment below which toxicity to benthic organisms is unlikely; the ERM is the concentration above which effects are likely. Concentrations between the ERL and ERM may be toxic and may require additional evaluation. At Eagle Harbor, the creosote-contaminated sediment contained more than 17,000 µg/g of total PAHs, more than 384 times higher than the ERM concentration. The high HI value and substantial exceedence of the ERM value for this sediment indicates that it is likely to be highly toxic to benthic fauna.

Approximately 34% of the HI for the creosote-contaminated sediment at Eagle Harbor was attributable to 4-ring+ (fluoranthene and higher) PAHs, most of which are pyrogenic (Table 5). Other predominantly pyrogenic PAHs also contributed to the HI, including acenaphthene, dibenzofuran, and anthracene. Dibenzothiophenes, which usually are considered primarily petrogenic, make a substantial contribution to the HI. Some of the creosote from the Wycoff wood treatment facility may have been distilled from a high-sulfur petroleum tar, which would contain high concentrations of dibenzothiophenes. These creosote-associated PAHs, particularly the higher molecular weight ones, have much higher log K_{oc}s than predicted (Mitra et al. 1999), indicating a low accessibility and bioavailability. Thus, it is likely that the sediments are much less toxic to benthic animals than predicted by the high HI value and exceedence of the ERM value.

The urban runoff sediment contained 25 ppm of total PAHs, about 55% of the ERM concentration and about 6 times the ERL concentration. The HI of the PAH assemblage in this sediment was 64, indicating a hazard (risk of toxicity) to benthic organisms if the PAH are accessible and bioavailable. This sediment would be toxic to benthic animals if the PAH associated with the sediment particles are accessible. As indicated in Table 5, this sediment sample was enriched in parent PAHs and several 4-ring+ PAHs characteristic of pyrogenic sources. There also is evidence of some petrogenic PAH contributions, particularly the dibenzothiophenes (DBT) that are much more abundant in petrogenic than pyrogenic PAH assemblages (Neff 2002). More than 40% of the HI for this sediment was attributable to 4-ring and higher PAHs (mostly pyrogenic) that tend to sorb to sediment particles much more strongly than predicted (Neff 2002). However, there may be enough alkyl naphthalenes, phenanthrenes, and dibenzothiophenes (mostly petrogenic) in the sediments to elicit effects in some sensitive benthic organisms.

The toxicity of two heavily contaminated Eagle Harbor sediments was evaluated with a sensitive sand dollar embryo test (Meador et al. 1990). The sediment samples contained 33.6 and 37.0 µg/g total PAH. There was 100% mortality of the echinoderm embryos during exposure to both sediments. Ozretich et al. (2000) evaluated the toxicity of 30 creosote-contaminated sediments from nearby Elliott Bay (WA, USA) with two amphipod species. Mean amphipod mortality was less than 10% (sediments were not toxic) in seven sediments containing 12 to 140 µg/g total PAH (34 parent and alkyl PAH groups). There was 100% mortality in eight sediments containing 500 to 25,000 µg/g PAH. Mean amphipod mortality ranged from 13 to 78% in the remaining sediments, containing 19 to 480 µg/g PAH. Thus, the creosote-contaminated sediment used in the present investigation, containing 17,000 µg/g total PAH, probably also would be toxic. The urban runoff sediment containing 25 µg/g PAH probably were either nontoxic or moderately toxic to benthic animals.

SUMMARY

The analysis of PAHs in sediments from Eagle Harbor shows how the source and composition of the PAH assemblage in sediment can affect its estimated hazard to aquatic animals. The HI approach to estimating the hazard of a complex mixture, like PAH, in sediments provides more information than the ERL/ERM or sediment toxicity approaches and can be used to aid in interpreting the significance of the hazard estimates and the causes of any risk identified. A combination of HI assessment and sediment toxicity probably would provide the largest amount of useful information upon which to base estimates of ecological risk of PAH-contaminated sediments.

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APPENDIX B

TRESPASSER IMMINENT HAZARD SHORT FORM

Trespasser - Soil: Table TSIH-1
Exposure Point Concentration (EPC)
Based on Trespasser Ages 11-16 (Cancer) and 11-12 (Non-Cancer)

ShortForm Version 10-12
Vlookup Version v0315

ELCR (all chemicals) = 1.5E-06
HI (all chemicals) = 1.7E-01

****Do not insert or delete any rows****
Click on empty cell below and select OHM using arrow.

Oil or Hazardous Material	EPC (mg/kg)	$ELCR_{ingestion}$	$ELCR_{dermal}$	$ELCR_{total}$	Subchronic HQ_{ing}	Subchronic HQ_{derm}	HQ_{total}
METHYLNAPHTHALENE, 2-	1.4E+00				3.7E-05	8.6E-05	1.2E-04
ACENAPHTHENE	4.1E+01				2.2E-05	5.0E-05	7.2E-05
ACENAPHTHYLENE	1.4E+00				5.0E-07	1.1E-06	1.6E-06
ANTHRACENE	1.1E+01				1.2E-06	2.7E-06	3.9E-06
BENZO(a)ANTHRACENE	1.4E+01	3.7E-08	1.9E-08	5.7E-08	5.0E-06	2.3E-06	7.3E-06
BENZO(a)PYRENE	2.3E+01	6.1E-07	3.2E-07	9.3E-07	8.2E-06	3.8E-06	1.2E-05
BENZO(b)FLUORANTHENE	7.9E+00	2.1E-08	1.1E-08	3.2E-08	2.8E-06	1.3E-06	4.1E-06
BENZO(g,h,i)PERYLENE	1.8E+01				6.4E-06	1.5E-05	2.1E-05
BENZO(k)FLUORANTHENE	5.3E+00	1.4E-09	7.4E-10	2.2E-09	1.9E-06	8.7E-07	2.7E-06
CHRYSENE	6.0E+00	1.6E-09	8.4E-10	2.4E-09	2.1E-06	9.8E-07	3.1E-06
DIBENZO(a,h)ANTHRACENE	1.2E+01	3.2E-07	1.7E-07	4.9E-07	4.3E-06	2.0E-06	6.2E-06
FLUORANTHENE	1.3E+01				1.4E-05	3.2E-05	4.6E-05
FLUORENE	2.0E+01				5.3E-06	1.2E-05	1.8E-05
INDENO(1,2,3-cd)PYRENE	3.7E+00	9.9E-09	5.1E-09	1.5E-08	1.3E-06	6.1E-07	1.9E-06
NAPHTHALENE	1.4E+01				7.4E-06	1.7E-05	2.5E-05
PHENANTHRENE	2.9E+01				1.0E-05	2.4E-05	3.4E-05
PYRENE	1.0E+01				3.5E-06	8.2E-06	1.2E-05
LEAD	6.8E+02				1.6E-01	1.3E-02	1.7E-01

Note! Lead IH HQ limit is 1, not 10.

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Trespasser - Soil: Table TSIH-2
Equations to Calculate Cancer Risk for a Trespasser (Age 11-16 years)

Vlookup Version v0315

Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing} * CSF$$

$$LADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{c\text{-}ing} * EF_{ing} * ED * EP * C}{BW * AP_{lifetime}}$$

Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF$$

$$LADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{c\text{-}derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP_{lifetime}}$$

Parameter	Value	Units
CSF	OHM specific	$(mg/kg\text{-}day)^{-1}$
LADD	OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
IR	50	mg/day
$RAF_{c\text{-}ing}$	OHM specific	dimensionless
$RAF_{c\text{-}derm}$	OHM specific	dimensionless
$EF_{ing,derm}$	0.164	event/day
ED	1	day/event
EP	5	years
C	0.000001	kg/mg
BW	48.2	kg
$AP_{(lifetime)}$	70	years
SA	2796	cm^2 / day
SAF	0.14	mg/cm^2

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Trespasser - Soil: Table TSIH-3

Equations to Calculate Subchronic Noncancer Risk for a Trespasser (Age 11-12 years)

Vlookup Version v0315

Subchronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{subchronic}}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc\text{-}ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

Subchronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{subchronic}}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc\text{-}derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
IR	50	mg/day
$RAF_{nc\text{-}ing}$	OHM specific	dimensionless
$RAF_{nc\text{-}derm}$	OHM specific	dimensionless
$EF_{ing,derm}$	0.286	event/day
ED	1	day/event
EP	0.577	years
C	0.000001	kg/mg
BW	40.3	kg
AP	0.577	year
SA	2477	cm^2 / day
SAF	0.14	mg/cm^2

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Trespasser - Soil: Table TSIH-4
Definitions and Exposure Factors

Vlookup Version v0315

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	$(mg/kg\text{-}day)^{-1}$	see Table RS-7
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
HQ - Hazard Quotient	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
RfD - Reference Dose	chemical specific	mg/kg-day	see Table RS-7
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
EPC - Exposure Point Concentration	chemical specific	mg/kg	
IR - Soil Ingestion Rate	50	mg/day	MADEP. 2002. Technical Update: Calculation of an Enhanced Soil Ingestion Rate. (http://www.mass.gov/dep/ors/orspubs.htm)
RAF_c - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	
$EF_{subchronic}$ - Exposure Frequency for subchronic ingestion or dermal exposure	0.286	event/day	2 days/week
EF_{cancer} - Exposure Frequency for cancer, ingestion or dermal exposure	0.164	event/day	2 days/week, 30 weeks/year
ED - Exposure Duration	1	day/event	
$EP_{(11\text{-}12)}$ - Exposure Period for age group 11-12	0.577	years	30 weeks
$EP_{(11\text{-}16)}$ - Exposure Period for age group 11-16	5	years	
$BW_{(11\text{-}12)}$ - Body Weight for age group 11-12	40.3	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7
$BW_{(11\text{-}16)}$ - Body Weight for age group 11-16	48.2	kg	Ibid
$AP_{subchronic}$ - Averaging Period for subchronic noncancer	0.577	years	30 weeks
AP_{cancer} - Averaging Period for lifetime	70	years	
$SA_{(11\text{-}12)}$ - Surface Area for age group 11-12	2477	cm^2 / day	50th percentile of forearms, hands, and feet for females. MADEP 1995 Guidance for Disposal Site Risk Characterization, Table B-2.
$SA_{(11\text{-}16)}$ - Surface Area for age group 11-16	2796.1	cm^2 / day	Ibid
SAF - Surface Adherence Factor, Trespasser	0.14	mg/cm^2	SAF developed for ShortForm according to procedure outlined in MA DEP Technical Update: Weighted Skin-Soil Adherence Factors, April 2002.

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Trespasser - Soil: Table TSIH-5
Chemical-Specific Data

Vlookup Version v0315

Oil or Hazardous Material	CSF $(mg/kg\text{-}day)^{-1}$	$RAF_{c\text{-}ing}$	$RAF_{c\text{-}derm}$	Subchronic RfD mg/kg-day	Subchronic $RAF_{nc\text{-}ing}$	Subchronic $RAF_{nc\text{-}derm}$
METHYLNAPHTHALENE, 2-				4.0E-03	0.3	0.1
ACENAPHTHENE				2.0E-01	0.3	0.1
ACENAPHTHYLENE				3.0E-01	0.3	0.1
ANTHRACENE				1.0E+00	0.3	0.1
BENZO(a)ANTHRACENE				3.0E-01	0.3	0.02
BENZO(a)PYRENE				3.0E-01	0.3	0.02
BENZO(b)FLUORANTHENE				3.0E-01	0.3	0.02
BENZO(g,h,i)PERYLENE				3.0E-01	0.3	0.1
BENZO(k)FLUORANTHENE				3.0E-01	0.3	0.02
CHRYSENE				3.0E-01	0.3	0.02
DIBENZO(a,h)ANTHRACENI				3.0E-01	0.3	0.02
FLUORANTHENE				1.0E-01	0.3	0.1
FLUORENE				4.0E-01	0.3	0.1
INDENO(1,2,3-cd)PYRENE				3.0E-01	0.3	0.02
NAPHTHALENE				2.0E-01	0.3	0.1
PHENANTHRENE				3.0E-01	0.3	0.1
PYRENE				3.0E-01	0.3	0.1
LEAD				7.5E-04	0.5	0.006

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Trespasser - Soil: Table TSIH-6
Cyanide Calculations

The soil cyanide concentration limit set to protect a trespasser against an acute, potentially lethal one-time dose of cyanide from incidental ingestion of contaminated soil is 8,000 mg/kg_{soil}. This is the concentration of available cyanide in soil below which acute human health effects would not be expected following a one-time exposure. This soil concentration is calculated using the equation below with a one-time soil ingestion estimate of 50 mg_{soil} and an available cyanide dose limit of 0.01 $mg/kg_{body\ weight}$.

MassDEP's guidance on evaluating the risk from a one-time cyanide dose considers cyanide's potentially lethal effects as well as information on cyanide metabolism:

> Cyanides are detoxified rapidly by the body, and a large acute dose which overwhelms the detoxification mechanism is potentially more toxic than the same dose distributed over a period of hours. (MassDEP *Background Documentation for the Development of an Available Cyanide Benchmark Concentration,* originally dated October 1992, Modified August 1998)

Assessment of a potential one-time dose requires an estimate of the maximum soil concentration the trespasser could contact at any one time. The average soil concentration within a typical exposure area will underestimate the potential one-time dose. Therefore, to assess the acute risk of a one-time potentially lethal dose, the EPC for cyanide should be a conservative estimate of the maximum soil concentration.

The trespasser soil concentration limit to protect against adverse effects from an acute (one-time) exposure to cyanide is 8000 mg/kg.

Concentration Calculation for Cyanide

$$\text{Concentration} = \frac{\text{HQ x Acute Dose Limit x BW}}{\text{IR x RAF x Conversion Factor}}$$

Parameter	Value	Units
HQ (Hazard Quotient)	1	(unitless)
Acute Dose Limit	0.01	mg avail. CN/ kg BW
BW (Body Weight) 11-12	40.3	kg
IR (1-time reasonable max)	50	mg
Conversion Factor	1.0E-06	kg soil / mg soil
RAF	1	(unitless)

The toxicological basis for estimating an allowable one-time is documented in MassDEP's 1992 *Background Documentation for the Development of an "Available Cyanide" Benchmark Concentration,* which is published at: http://www.mass.gov/eea/docs/dep/toxics/stypes/dscyanide.pdf

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Trespasser - Soil: Table TSIH-6
Cyanide Calculations

The soil cyanide concentration limit set to protect a trespasser against an acute, potentially lethal one-time dose of cyanide from incidental ingestion of contaminated soil is 8,000 mg/kg_{soil}. This is the concentration of available cyanide in soil below which acute human health effects would not be expected following a one-time exposure. This soil concentration is calculated using the equation below with a one-time soil ingestion estimate of 50 mg_{soil} and an available cyanide dose limit of 0.01 $mg/kg_{body\ weight}$.

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The trespasser soil concentration limit to protect against adverse effects from an acute (one-time) exposure to cyanide is 8000 mg/kg.

APPENDIX C

LABORATORY REPORTS 2021 AND 2022

ANALYTICAL REPORT

Lab Number:	L2141856
Client:	Horseley & Witten, Inc. Sextant Hill Office Park 90 Route 6A Sandwich, MA 02563
ATTN:	Brian Massa
Phone:	(508) 833-6600
Project Name:	CAPE COD GATEWAY AIRPORT
Project Number:	Not Specified
Report Date:	08/19/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2141856-01	LP-1	SOIL	HYANNIS, MA	08/02/21 11:25	08/05/21
L2141856-02	LP-10	SOIL	HYANNIS, MA	08/02/21 11:35	08/05/21
L2141856-03	LP-9	SOIL	HYANNIS, MA	08/02/21 11:45	08/05/21
L2141856-04	LP-7	SOIL	HYANNIS, MA	08/02/21 11:55	08/05/21
L2141856-05	LP-COMP 1	SOIL	HYANNIS, MA	08/02/21 11:25	08/05/21
L2141856-06	LP-5	SOIL	HYANNIS, MA	08/02/21 12:10	08/05/21
L2141856-07	LP-4	SOIL	HYANNIS, MA	08/02/21 12:20	08/05/21
L2141856-08	LP-3	SOIL	HYANNIS, MA	08/02/21 12:32	08/05/21
L2141856-09	LP-6	SOIL	HYANNIS, MA	08/02/21 12:43	08/05/21
L2141856-10	LP-COMP 2	SOIL	HYANNIS, MA	08/02/21 12:10	08/05/21
L2141856-11	MD-1	SOIL	HYANNIS, MA	08/02/21 16:20	08/05/21
L2141856-12	MD-2	SOIL	HYANNIS, MA	08/02/21 16:42	08/05/21
L2141856-13	MD-3	SOIL	HYANNIS, MA	08/02/21 16:57	08/05/21
L2141856-14	MD-4	SOIL	HYANNIS, MA	08/02/21 17:10	08/05/21
L2141856-15	MD-COMP	SOIL	HYANNIS, MA	08/02/21 16:20	08/05/21

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2141856
Project Number:	Not Specified	**Report Date:**	08/19/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856
Project Number: Not Specified **Report Date:** 08/19/21

Case Narrative (continued)

Report Submission

August 19, 2021: This final report includes the results of all requested analyses.

August 12, 2021: This is a preliminary report.

MCP Related Narratives

Sample Receipt

The analyses performed were specified by the client.

In reference to question H:

A Matrix Spike was not submitted for the analysis of Total Metals.

PAHs by SIM

L2141856-01, -02, -03, -04, -06, -07, -08, -09, -10, and -15: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix.

In reference to question G:

L2141856-01, -02, -03, -04, -06, -07, -08, -09, -10, and -15: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question I:

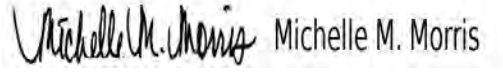
All samples were analyzed for a subset of MCP analytes per client request.

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 08/19/21

QC OUTLIER SUMMARY REPORT

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
MCP Semivolatile Organics by SIM - Westborough Lab								
8270D-SIM	Batch QC	WG1533821-2	Nitrobenzene-d5	Surrogate	135	30-130	-	potential high bias

ORGANICS

SEMIVOLATILES

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-01
Client ID: LP-1
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:25
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 20:24
Analyst: DV
Percent Solids: 63%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	30		ug/kg	30	--	1
Fluoranthene	3100	E	ug/kg	30	--	1
Naphthalene	ND		ug/kg	30	--	1
Benzo(a)anthracene	920		ug/kg	30	--	1
Benzo(a)pyrene	1300		ug/kg	30	--	1
Benzo(b)fluoranthene	2200		ug/kg	30	--	1
Benzo(k)fluoranthene	660		ug/kg	30	--	1
Chrysene	1400		ug/kg	30	--	1
Acenaphthylene	74		ug/kg	30	--	1
Anthracene	1300		ug/kg	30	--	1
Benzo(ghi)perylene	1200		ug/kg	30	--	1
Fluorene	46		ug/kg	30	--	1
Phenanthrene	1200		ug/kg	30	--	1
Dibenzo(a,h)anthracene	230		ug/kg	30	--	1
Indeno(1,2,3-cd)pyrene	1400		ug/kg	30	--	1
Pyrene	2400		ug/kg	30	--	1
2-Methylnaphthalene	ND		ug/kg	30	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		30-130
2-Fluorobiphenyl	85		30-130
4-Terphenyl-d14	85		30-130

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-01 D
Client ID: LP-1
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:25
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/18/21 16:25
Analyst: DV
Percent Solids: 63%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Fluoranthene	2800		ug/kg	60	--	2

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-02
Client ID: LP-10
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:35
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 20:41
Analyst: DV
Percent Solids: 22%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	86	--	1
Fluoranthene	1200		ug/kg	86	--	1
Naphthalene	ND		ug/kg	86	--	1
Benzo(a)anthracene	300		ug/kg	86	--	1
Benzo(a)pyrene	510		ug/kg	86	--	1
Benzo(b)fluoranthene	990		ug/kg	86	--	1
Benzo(k)fluoranthene	260		ug/kg	86	--	1
Chrysene	610		ug/kg	86	--	1
Acenaphthylene	ND		ug/kg	86	--	1
Anthracene	ND		ug/kg	86	--	1
Benzo(ghi)perylene	470		ug/kg	86	--	1
Fluorene	90		ug/kg	86	--	1
Phenanthrene	550		ug/kg	86	--	1
Dibenzo(a,h)anthracene	96		ug/kg	86	--	1
Indeno(1,2,3-cd)pyrene	580		ug/kg	86	--	1
Pyrene	930		ug/kg	86	--	1
2-Methylnaphthalene	ND		ug/kg	86	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		30-130
2-Fluorobiphenyl	68		30-130
4-Terphenyl-d14	65		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-03
Client ID: LP-9
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:45
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 20:57
Analyst: DV
Percent Solids: 6%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	300	--	1
Fluoranthene	2100		ug/kg	300	--	1
Naphthalene	ND		ug/kg	300	--	1
Benzo(a)anthracene	410		ug/kg	300	--	1
Benzo(a)pyrene	750		ug/kg	300	--	1
Benzo(b)fluoranthene	1600		ug/kg	300	--	1
Benzo(k)fluoranthene	400		ug/kg	300	--	1
Chrysene	980		ug/kg	300	--	1
Acenaphthylene	ND		ug/kg	300	--	1
Anthracene	ND		ug/kg	300	--	1
Benzo(ghi)perylene	800		ug/kg	300	--	1
Fluorene	300		ug/kg	300	--	1
Phenanthrene	980		ug/kg	300	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	300	--	1
Indeno(1,2,3-cd)pyrene	940		ug/kg	300	--	1
Pyrene	1600		ug/kg	300	--	1
2-Methylnaphthalene	ND		ug/kg	300	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		30-130
2-Fluorobiphenyl	31		30-130
4-Terphenyl-d14	36		30-130

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-04
Client ID: LP-7
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:55
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 21:13
Analyst: DV
Percent Solids: 16%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	120	--	1
Fluoranthene	860		ug/kg	120	--	1
Naphthalene	ND		ug/kg	120	--	1
Benzo(a)anthracene	320		ug/kg	120	--	1
Benzo(a)pyrene	430		ug/kg	120	--	1
Benzo(b)fluoranthene	750		ug/kg	120	--	1
Benzo(k)fluoranthene	220		ug/kg	120	--	1
Chrysene	490		ug/kg	120	--	1
Acenaphthylene	ND		ug/kg	120	--	1
Anthracene	ND		ug/kg	120	--	1
Benzo(ghi)perylene	350		ug/kg	120	--	1
Fluorene	ND		ug/kg	120	--	1
Phenanthrene	380		ug/kg	120	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	120	--	1
Indeno(1,2,3-cd)pyrene	430		ug/kg	120	--	1
Pyrene	700		ug/kg	120	--	1
2-Methylnaphthalene	ND		ug/kg	120	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		30-130
2-Fluorobiphenyl	65		30-130
4-Terphenyl-d14	55		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-05
Client ID: LP-COMP 1
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:25
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/12/21 15:05
Analyst: DV
Percent Solids: 31%

Extraction Method: EPA 3546
Extraction Date: 08/11/21 09:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	21	--	1
Fluoranthene	1200		ug/kg	21	--	1
Naphthalene	ND		ug/kg	21	--	1
Benzo(a)anthracene	440		ug/kg	21	--	1
Benzo(a)pyrene	600		ug/kg	21	--	1
Benzo(b)fluoranthene	1000		ug/kg	21	--	1
Benzo(k)fluoranthene	350		ug/kg	21	--	1
Chrysene	660		ug/kg	21	--	1
Acenaphthylene	57		ug/kg	21	--	1
Anthracene	65		ug/kg	21	--	1
Benzo(ghi)perylene	490		ug/kg	21	--	1
Fluorene	32		ug/kg	21	--	1
Phenanthrene	500		ug/kg	21	--	1
Dibenzo(a,h)anthracene	100		ug/kg	21	--	1
Indeno(1,2,3-cd)pyrene	550		ug/kg	21	--	1
Pyrene	910		ug/kg	21	--	1
2-Methylnaphthalene	ND		ug/kg	21	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		30-130
2-Fluorobiphenyl	61		30-130
4-Terphenyl-d14	52		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-06
Client ID: LP-5
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:10
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 21:30
Analyst: DV
Percent Solids: 11%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	180	--	1
Fluoranthene	600		ug/kg	180	--	1
Naphthalene	400		ug/kg	180	--	1
Benzo(a)anthracene	230		ug/kg	180	--	1
Benzo(a)pyrene	280		ug/kg	180	--	1
Benzo(b)fluoranthene	490		ug/kg	180	--	1
Benzo(k)fluoranthene	ND		ug/kg	180	--	1
Chrysene	340		ug/kg	180	--	1
Acenaphthylene	ND		ug/kg	180	--	1
Anthracene	ND		ug/kg	180	--	1
Benzo(ghi)perylene	240		ug/kg	180	--	1
Fluorene	ND		ug/kg	180	--	1
Phenanthrene	300		ug/kg	180	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	180	--	1
Indeno(1,2,3-cd)pyrene	290		ug/kg	180	--	1
Pyrene	500		ug/kg	180	--	1
2-Methylnaphthalene	ND		ug/kg	180	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		30-130
2-Fluorobiphenyl	60		30-130
4-Terphenyl-d14	45		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-07
Client ID: LP-4
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:20
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 21:46
Analyst: DV
Percent Solids: 9%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	230	--	1
Fluoranthene	580		ug/kg	230	--	1
Naphthalene	ND		ug/kg	230	--	1
Benzo(a)anthracene	ND		ug/kg	230	--	1
Benzo(a)pyrene	ND		ug/kg	230	--	1
Benzo(b)fluoranthene	360		ug/kg	230	--	1
Benzo(k)fluoranthene	ND		ug/kg	230	--	1
Chrysene	250		ug/kg	230	--	1
Acenaphthylene	ND		ug/kg	230	--	1
Anthracene	ND		ug/kg	230	--	1
Benzo(ghi)perylene	ND		ug/kg	230	--	1
Fluorene	ND		ug/kg	230	--	1
Phenanthrene	350		ug/kg	230	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	230	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	230	--	1
Pyrene	460		ug/kg	230	--	1
2-Methylnaphthalene	ND		ug/kg	230	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		30-130
2-Fluorobiphenyl	63		30-130
4-Terphenyl-d14	39		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-08
Client ID: LP-3
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:32
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 22:02
Analyst: DV
Percent Solids: 12%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	150	--	1
Fluoranthene	630		ug/kg	150	--	1
Naphthalene	ND		ug/kg	150	--	1
Benzo(a)anthracene	230		ug/kg	150	--	1
Benzo(a)pyrene	300		ug/kg	150	--	1
Benzo(b)fluoranthene	600		ug/kg	150	--	1
Benzo(k)fluoranthene	150		ug/kg	150	--	1
Chrysene	350		ug/kg	150	--	1
Acenaphthylene	ND		ug/kg	150	--	1
Anthracene	ND		ug/kg	150	--	1
Benzo(ghi)perylene	270		ug/kg	150	--	1
Fluorene	ND		ug/kg	150	--	1
Phenanthrene	280		ug/kg	150	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	150	--	1
Indeno(1,2,3-cd)pyrene	330		ug/kg	150	--	1
Pyrene	500		ug/kg	150	--	1
2-Methylnaphthalene	ND		ug/kg	150	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		30-130
2-Fluorobiphenyl	45		30-130
4-Terphenyl-d14	56		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-09
Client ID: LP-6
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:43
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 22:18
Analyst: DV
Percent Solids: 6%

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	320	--	1
Fluoranthene	790		ug/kg	320	--	1
Naphthalene	ND		ug/kg	320	--	1
Benzo(a)anthracene	ND		ug/kg	320	--	1
Benzo(a)pyrene	ND		ug/kg	320	--	1
Benzo(b)fluoranthene	520		ug/kg	320	--	1
Benzo(k)fluoranthene	ND		ug/kg	320	--	1
Chrysene	350		ug/kg	320	--	1
Acenaphthylene	ND		ug/kg	320	--	1
Anthracene	ND		ug/kg	320	--	1
Benzo(ghi)perylene	ND		ug/kg	320	--	1
Fluorene	ND		ug/kg	320	--	1
Phenanthrene	410		ug/kg	320	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	320	--	1
Indeno(1,2,3-cd)pyrene	330		ug/kg	320	--	1
Pyrene	600		ug/kg	320	--	1
2-Methylnaphthalene	ND		ug/kg	320	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	124		30-130
2-Fluorobiphenyl	85		30-130
4-Terphenyl-d14	71		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-10
Client ID: LP-COMP 2
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:10
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/09/21 14:10
Analyst: DV
Percent Solids: 10%

Extraction Method: EPA 3546
Extraction Date: 08/07/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	200	--	1
Fluoranthene	550		ug/kg	200	--	1
Naphthalene	ND		ug/kg	200	--	1
Benzo(a)anthracene	320		ug/kg	200	--	1
Benzo(a)pyrene	320		ug/kg	200	--	1
Benzo(b)fluoranthene	500		ug/kg	200	--	1
Benzo(k)fluoranthene	ND		ug/kg	200	--	1
Chrysene	360		ug/kg	200	--	1
Acenaphthylene	ND		ug/kg	200	--	1
Anthracene	ND		ug/kg	200	--	1
Benzo(ghi)perylene	220		ug/kg	200	--	1
Fluorene	ND		ug/kg	200	--	1
Phenanthrene	240		ug/kg	200	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	200	--	1
Indeno(1,2,3-cd)pyrene	240		ug/kg	200	--	1
Pyrene	470		ug/kg	200	--	1
2-Methylnaphthalene	ND		ug/kg	200	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		30-130
2-Fluorobiphenyl	61		30-130
4-Terphenyl-d14	53		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-15
Client ID: MD-COMP
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 16:20
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/12/21 15:21
Analyst: DV
Percent Solids: 51%

Extraction Method: EPA 3546
Extraction Date: 08/07/21 22:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	ND		ug/kg	38	--	1
Fluoranthene	ND		ug/kg	38	--	1
Naphthalene	ND		ug/kg	38	--	1
Benzo(a)anthracene	ND		ug/kg	38	--	1
Benzo(a)pyrene	ND		ug/kg	38	--	1
Benzo(b)fluoranthene	ND		ug/kg	38	--	1
Benzo(k)fluoranthene	ND		ug/kg	38	--	1
Chrysene	ND		ug/kg	38	--	1
Acenaphthylene	ND		ug/kg	38	--	1
Anthracene	ND		ug/kg	38	--	1
Benzo(ghi)perylene	ND		ug/kg	38	--	1
Fluorene	ND		ug/kg	38	--	1
Phenanthrene	ND		ug/kg	38	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	38	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	38	--	1
Pyrene	ND		ug/kg	38	--	1
2-Methylnaphthalene	ND		ug/kg	38	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		30-130
2-Fluorobiphenyl	85		30-130
4-Terphenyl-d14	69		30-130

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified
Lab Number: L2141856
Report Date: 08/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 08/09/21 10:25
Analyst: DV

Extraction Method: EPA 3546
Extraction Date: 08/07/21 22:10

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 10,15 Batch: WG1532685-1					
Acenaphthene	ND		ug/kg	6.5	--
Fluoranthene	ND		ug/kg	6.5	--
Naphthalene	ND		ug/kg	6.5	--
Benzo(a)anthracene	ND		ug/kg	6.5	--
Benzo(a)pyrene	ND		ug/kg	6.5	--
Benzo(b)fluoranthene	ND		ug/kg	6.5	--
Benzo(k)fluoranthene	ND		ug/kg	6.5	--
Chrysene	ND		ug/kg	6.5	--
Acenaphthylene	ND		ug/kg	6.5	--
Anthracene	ND		ug/kg	6.5	--
Benzo(ghi)perylene	ND		ug/kg	6.5	--
Fluorene	ND		ug/kg	6.5	--
Phenanthrene	ND		ug/kg	6.5	--
Dibenzo(a,h)anthracene	ND		ug/kg	6.5	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.5	--
Pyrene	ND		ug/kg	6.5	--
2-Methylnaphthalene	ND		ug/kg	6.5	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	47		30-130
2-Fluorobiphenyl	45		30-130
4-Terphenyl-d14	51		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 08/12/21 14:48
Analyst: DV

Extraction Method: EPA 3546
Extraction Date: 08/11/21 09:36

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 05 Batch: WG1533821-1					
Acenaphthene	ND		ug/kg	6.6	--
Fluoranthene	ND		ug/kg	6.6	--
Naphthalene	ND		ug/kg	6.6	--
Benzo(a)anthracene	ND		ug/kg	6.6	--
Benzo(a)pyrene	ND		ug/kg	6.6	--
Benzo(b)fluoranthene	ND		ug/kg	6.6	--
Benzo(k)fluoranthene	ND		ug/kg	6.6	--
Chrysene	ND		ug/kg	6.6	--
Acenaphthylene	ND		ug/kg	6.6	--
Anthracene	ND		ug/kg	6.6	--
Benzo(ghi)perylene	ND		ug/kg	6.6	--
Fluorene	ND		ug/kg	6.6	--
Phenanthrene	ND		ug/kg	6.6	--
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	--
Pyrene	ND		ug/kg	6.6	--
2-Methylnaphthalene	ND		ug/kg	6.6	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		30-130
2-Fluorobiphenyl	89		30-130
4-Terphenyl-d14	98		30-130

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified
Lab Number: L2141856
Report Date: 08/19/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 08/15/21 20:08
Analyst: DV

Extraction Method: EPA 3546
Extraction Date: 08/14/21 16:23

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01-04,06-09 Batch: WG1535169-1					
Acenaphthene	ND		ug/kg	19	--
Fluoranthene	ND		ug/kg	19	--
Naphthalene	ND		ug/kg	19	--
Benzo(a)anthracene	ND		ug/kg	19	--
Benzo(a)pyrene	ND		ug/kg	19	--
Benzo(b)fluoranthene	ND		ug/kg	19	--
Benzo(k)fluoranthene	ND		ug/kg	19	--
Chrysene	ND		ug/kg	19	--
Acenaphthylene	ND		ug/kg	19	--
Anthracene	ND		ug/kg	19	--
Benzo(ghi)perylene	ND		ug/kg	19	--
Fluorene	ND		ug/kg	19	--
Phenanthrene	ND		ug/kg	19	--
Dibenzo(a,h)anthracene	ND		ug/kg	19	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	19	--
Pyrene	ND		ug/kg	19	--
2-Methylnaphthalene	ND		ug/kg	19	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		30-130
2-Fluorobiphenyl	86		30-130
4-Terphenyl-d14	108		30-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 10,15 Batch: WG1532685-2 WG1532685-3								
Acenaphthene	67		67		40-140	0		30
Fluoranthene	72		73		40-140	1		30
Naphthalene	66		67		40-140	2		30
Benzo(a)anthracene	68		70		40-140	3		30
Benzo(a)pyrene	76		77		40-140	1		30
Benzo(b)fluoranthene	77		77		40-140	0		30
Benzo(k)fluoranthene	73		75		40-140	3		30
Chrysene	69		71		40-140	3		30
Acenaphthylene	70		71		40-140	1		30
Anthracene	69		70		40-140	1		30
Benzo(ghi)perylene	73		73		40-140	0		30
Fluorene	71		73		40-140	3		30
Phenanthrene	68		69		40-140	1		30
Dibenzo(a,h)anthracene	72		73		40-140	1		30
Indeno(1,2,3-cd)pyrene	76		77		40-140	1		30
Pyrene	71		71		40-140	0		30
2-Methylnaphthalene	65		65		40-140	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 10,15 Batch: WG1532685-2 WG1532685-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	64		65		30-130
2-Fluorobiphenyl	62		63		30-130
4-Terphenyl-d14	71		71		30-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 05 Batch: WG1533821-2 WG1533821-3								
Acenaphthene	107		94		40-140	13		30
Fluoranthene	105		100		40-140	5		30
Naphthalene	116		88		40-140	27		30
Benzo(a)anthracene	107		105		40-140	2		30
Benzo(a)pyrene	116		112		40-140	4		30
Benzo(b)fluoranthene	117		112		40-140	4		30
Benzo(k)fluoranthene	112		109		40-140	3		30
Chrysene	103		99		40-140	4		30
Acenaphthylene	126		94		40-140	29		30
Anthracene	105		101		40-140	4		30
Benzo(ghi)perylene	112		108		40-140	4		30
Fluorene	111		96		40-140	14		30
Phenanthrene	103		98		40-140	5		30
Dibenzo(a,h)anthracene	113		111		40-140	2		30
Indeno(1,2,3-cd)pyrene	122		115		40-140	6		30
Pyrene	103		99		40-140	4		30
2-Methylnaphthalene	117		88		40-140	28		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: Not Specified

Lab Number: L2141856

Report Date: 08/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 05 Batch: WG1533821-2 WG1533821-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	**135**	Q	103		30-130
2-Fluorobiphenyl	112		85		30-130
4-Terphenyl-d14	97		93		30-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-04,06-09 Batch: WG1535169-2 WG1535169-3								
Acenaphthene	90		100		40-140	11		30
Fluoranthene	96		109		40-140	13		30
Naphthalene	91		100		40-140	9		30
Benzo(a)anthracene	93		102		40-140	9		30
Benzo(a)pyrene	98		110		40-140	12		30
Benzo(b)fluoranthene	92		101		40-140	9		30
Benzo(k)fluoranthene	93		109		40-140	16		30
Chrysene	86		97		40-140	12		30
Acenaphthylene	99		109		40-140	10		30
Anthracene	95		107		40-140	12		30
Benzo(ghi)perylene	93		104		40-140	11		30
Fluorene	92		102		40-140	10		30
Phenanthrene	90		101		40-140	12		30
Dibenzo(a,h)anthracene	104		117		40-140	12		30
Indeno(1,2,3-cd)pyrene	102		114		40-140	11		30
Pyrene	96		109		40-140	13		30
2-Methylnaphthalene	94		103		40-140	9		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: Not Specified

Lab Number: L2141856

Report Date: 08/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-04,06-09 Batch: WG1535169-2 WG1535169-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	103		111		30-130
2-Fluorobiphenyl	89		98		30-130
4-Terphenyl-d14	108		123		30-130

METALS

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-01
Client ID: LP-1
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 11:25
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 63%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	14.8		mg/kg	3.16	--	1	08/13/21 23:15	08/16/21 18:05	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-02 Date Collected: 08/02/21 11:35

Client ID: LP-10 Date Received: 08/05/21

Sample Location: HYANNIS, MA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 22%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	240		mg/kg	8.82	--	1	08/13/21 23:15	08/16/21 18:10	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-03
Client ID: LP-9
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 11:45
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 6%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	108		mg/kg	30.4	--	1	08/13/21 23:15	08/16/21 18:14	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-04
Client ID: LP-7
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 11:55
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 16%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	371		mg/kg	12.6	--	1	08/13/21 23:15	08/16/21 18:19	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-05
Client ID: LP-COMP 1
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 11:25
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 31%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	107		mg/kg	6.39	--	1	08/19/21 12:19	08/19/21 14:00	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-06
Client ID: LP-5
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 12:10
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 11%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	241		mg/kg	18.5	--	1	08/13/21 23:15	08/16/21 18:41	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-07
Client ID: LP-4
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 12:20
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 9%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	184		mg/kg	22.5	--	1	08/13/21 23:15	08/16/21 18:46	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-08
Client ID: LP-3
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 12:32
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 12%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	198		mg/kg	16.2	--	1	08/13/21 23:15	08/16/21 17:47	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-09
Client ID: LP-6
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 12:43
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 6%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	119		mg/kg	33.4	--	1	08/13/21 23:15	08/16/21 17:56	EPA 3050B	97,6010D	SV

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-10
Client ID: LP-COMP 2
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 12:10
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 10%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	196		mg/kg	20.0	--	1	08/09/21 14:26	08/09/21 20:24	EPA 3050B	97,6010D	GD

Project Name: CAPE COD GATEWAY AIRPORT
Lab Number: L2141856
Project Number: Not Specified
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-15
Client ID: MD-COMP
Sample Location: HYANNIS, MA
Date Collected: 08/02/21 16:20
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 51%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	66.0		mg/kg	3.70	--	1	08/09/21 14:26	08/09/21 21:19	EPA 3050B	97,6010D	GD

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2141856

Project Number: Not Specified **Report Date:** 08/19/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 10,15 Batch: WG1532917-1										
Lead, Total	ND		mg/kg	2.00	--	1	08/09/21 14:26	08/09/21 21:06	97,6010D	GD

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-04,06-09 Batch: WG1534984-1										
Lead, Total	ND		mg/kg	2.00	--	1	08/13/21 23:15	08/16/21 16:44	97,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 05 Batch: WG1536945-1										
Lead, Total	ND		mg/kg	2.00	--	1	08/19/21 12:19	08/19/21 13:48	97,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: Not Specified

Lab Number: L2141856

Report Date: 08/19/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 10,15 Batch: WG1532917-2 WG1532917-3 SRM Lot Number: D109-540								
Lead, Total	85		88		72-128	3		30
MCP Total Metals - Mansfield Lab Associated sample(s): 01-04,06-09 Batch: WG1534984-2 WG1534984-3 SRM Lot Number: D109-540								
Lead, Total	92		95		72-128	3		30
MCP Total Metals - Mansfield Lab Associated sample(s): 05 Batch: WG1536945-2 WG1536945-3 SRM Lot Number: D109-540								
Lead, Total	105		92		72-128	13		30

INORGANICS
&
MISCELLANEOUS

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-01
Client ID: LP-1
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:25
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	62.7		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-02
Client ID: LP-10
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:35
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	22.2		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-03
Client ID: LP-9
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:45
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	6.38		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-04
Client ID: LP-7
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:55
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	15.6		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-05
Client ID: LP-COMP 1
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 11:25
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	30.8		%	0.100	NA	1	-	08/10/21 11:12	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-06
Client ID: LP-5
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:10
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	10.7		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-07
Client ID: LP-4
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:20
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	8.58		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-08
Client ID: LP-3
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:32
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	12.3		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-09
Client ID: LP-6
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:43
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	5.98		%	0.100	NA	1	-	08/14/21 12:08	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-10
Client ID: LP-COMP 2
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 12:10
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	9.62		%	0.100	NA	1	-	08/07/21 09:58	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

SAMPLE RESULTS

Lab ID: L2141856-15
Client ID: MD-COMP
Sample Location: HYANNIS, MA

Date Collected: 08/02/21 16:20
Date Received: 08/05/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	51.4		%	0.100	NA	1	-	08/07/21 09:58	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2141856-01A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-01B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-01C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-01D	Glass 120ml unpreserved split	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-02A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-02B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-02C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-03A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-03B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-03C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-04A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-04B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-04C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-05A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-05B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-05C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-06A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-06B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-06C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-07A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-07B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-07C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-08A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: Not Specified

Lab Number: L2141856
Report Date: 08/19/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2141856-08B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-08C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-09A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-09B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-09C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-10A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-10B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-10C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)
L2141856-11A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2141856-11B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		HOLD-METAL(180),HOLD-8270(14)
L2141856-11C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		-
L2141856-12A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2141856-12B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		HOLD-8270(14),HOLD-METAL(180)
L2141856-12C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		-
L2141856-13A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2141856-13B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		HOLD-8270(14),HOLD-METAL(180)
L2141856-13C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		-
L2141856-14A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		HOLD-WETCHEM()
L2141856-14B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		HOLD-8270(14),HOLD-METAL(180)
L2141856-14C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		-
L2141856-15A	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2141856-15B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		MCP-PB-6010T-10(180)
L2141856-15C	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		MCP-PAHSIM-10(14)

*Values in parentheses indicate holding time in days

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2141856
Project Number:	Not Specified	**Report Date:**	08/19/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2141856
Project Number:	Not Specified	**Report Date:**	08/19/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2141856
Project Number:	Not Specified	**Report Date:**	08/19/21

Data Qualifiers

the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 8/5/21

ALPHA Job #: L2141856

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information

Project Name: CAPE COD GATEWAY AIRPORT
Project Location: HYANNIS, MA
Project #: 21083
Project Manager: BRYAN MASSA
ALPHA Quote #:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #:

Client Information

Client: HORSLEY WITTEN GROUP
Address: 90 ROUTE 6A
SANDWICH, MA 02563
Phone: 508-833-6600
Email: jibanez@horsleywitten.com

Regulatory Requirements & Project Information Requirements

☒ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Additional Project Information:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Lead
PAH SIM
Total % Solids

SAMPLE INFO

Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Sample Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	TOTAL # BOTTLES
41856-1	LP-1	8/2/21	1125	Sediment	JI	3
-02	LP-10		1135			
-03	LP-9		1145			
-04	LP-7		1155			
-05	LP-COMP1		1125			
-06	LP-5		1210			
-07	LP-4		1220			
-08	LP-3		1232			
-09	LP-6		1243			
-10	LP-COMP2		1240			

Container Type	2oz	4oz	2oz
	P/G	P/G	P
Preservative	A	A	A

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
MCM	8/5/21 1015	MCM MUTZ AAZ	8/5/21 1015
	8/5/21 1235		8/5/21 1235

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 8/5/21

ALPHA Job #: L2141858

ALPHA Analytical
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: HORSLEY WITTEN GROUP
Address: 90 ROUTE 6A
SANDWICH, MA 02360
Phone: 508-833-6600
Email: jibanez@horsleywitten.com

Additional Project Information:

Project Information

Project Name: CAPE COD GATEWAY AIRPORT
Project Location: HYANNIS, MA
Project #: 21083
Project Manager: BRYAN MASSA
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Report Information - Data Deliverables

☐ ADEx ☐ EMAIL

Billing Information

☐ Same as Client Info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: Lead PATHSIM	ANALYSIS: Total % Solid	SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do	Sample Comments	TOTAL # BOTTLES
41856-11	MD-1	8/2/21	1620	SEDIMENT	JI	X	X			3
-12	MD-2		1642			X	X			
-13	MD-3		1657			X	X			
-14	MD-4		1710			X	X			
-15	MD-COMP	↓	1620	↓	↓	X	X			↓

Container Type						A	A	A		
Preservative						A	A	A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	8/5/21 1015		8/5/21 1015
	8/5/21 1225		8/5/21 1225

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L2144221
Client:	Horseley & Witten, Inc. Sextant Hill Office Park 90 Route 6A Sandwich, MA 02563
ATTN:	Brian Massa
Phone:	(508) 833-6600
Project Name:	CAPE COD GATEWAY AIRPORT
Project Number:	21083
Report Date:	08/24/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2144221
Report Date: 08/24/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2144221-01	UG-11	SOIL	HYANNIS, MA	08/06/21 09:50	08/09/21
L2144221-02	UG-11A	SOIL	HYANNIS, MA	08/06/21 10:05	08/09/21
L2144221-03	UG-11B	SOIL	HYANNIS, MA	08/06/21 10:20	08/09/21

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2144221
Project Number:	21083	**Report Date:**	08/24/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2144221
Project Number:	21083	**Report Date:**	08/24/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

MCP Related Narratives

Sample Receipt

In reference to question H:

A Matrix Spike was not submitted for the analysis of Total Metals.

Semivolatile Organics

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Jennifer L Clements

Title: Technical Director/Representative Date: 08/24/21

QC OUTLIER SUMMARY REPORT

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2144221
Report Date: 08/24/21

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

ORGANICS

SEMIVOLATILES

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-01 D
Client ID: UG-11
Sample Location: HYANNIS, MA

Date Collected: 08/06/21 09:50
Date Received: 08/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/24/21 15:21
Analyst: RP
Percent Solids: 21%

Extraction Method: EPA 3546
Extraction Date: 08/19/21 01:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	110	J	ug/kg	160	33.	5
Fluoranthene	10000		ug/kg	160	11.	5
Naphthalene	120	J	ug/kg	160	28.	5
Benzo(a)anthracene	3400		ug/kg	160	15.	5
Benzo(a)pyrene	4000		ug/kg	160	19.	5
Benzo(b)fluoranthene	7000		ug/kg	160	15.	5
Benzo(k)fluoranthene	2800		ug/kg	160	14.	5
Chrysene	5200		ug/kg	160	12.	5
Acenaphthylene	350		ug/kg	160	19.	5
Anthracene	520		ug/kg	160	12.	5
Benzo(ghi)perylene	3400		ug/kg	160	13.	5
Fluorene	270		ug/kg	160	19.	5
Phenanthrene	3300		ug/kg	160	13.	5
Dibenzo(a,h)anthracene	690		ug/kg	160	16.	5
Indeno(1,2,3-cd)pyrene	3700		ug/kg	160	19.	5
Pyrene	8300		ug/kg	160	11.	5
2-Methylnaphthalene	62	J	ug/kg	160	44.	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		30-130
2-Fluorobiphenyl	55		30-130
4-Terphenyl-d14	57		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-02
Client ID: UG-11A
Sample Location: HYANNIS, MA

Date Collected: 08/06/21 10:05
Date Received: 08/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/24/21 16:59
Analyst: RP
Percent Solids: 10%

Extraction Method: EPA 3546
Extraction Date: 08/19/21 01:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	23	J	ug/kg	64	14.	1
Fluoranthene	1500		ug/kg	64	4.5	1
Naphthalene	38	J	ug/kg	64	12.	1
Benzo(a)anthracene	530		ug/kg	64	6.1	1
Benzo(a)pyrene	710		ug/kg	64	7.8	1
Benzo(b)fluoranthene	1200		ug/kg	64	6.1	1
Benzo(k)fluoranthene	400		ug/kg	64	5.8	1
Chrysene	820		ug/kg	64	4.8	1
Acenaphthylene	91		ug/kg	64	8.1	1
Anthracene	100		ug/kg	64	5.2	1
Benzo(ghi)perylene	590		ug/kg	64	5.5	1
Fluorene	56	J	ug/kg	64	7.8	1
Phenanthrene	430		ug/kg	64	5.5	1
Dibenzo(a,h)anthracene	120		ug/kg	64	6.4	1
Indeno(1,2,3-cd)pyrene	650		ug/kg	64	7.8	1
Pyrene	1300		ug/kg	64	4.5	1
2-Methylnaphthalene	18	J	ug/kg	64	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		30-130
2-Fluorobiphenyl	41		30-130
4-Terphenyl-d14	31		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-03
Client ID: UG-11B
Sample Location: HYANNIS, MA

Date Collected: 08/06/21 10:20
Date Received: 08/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 97,8270D-SIM
Analytical Date: 08/19/21 16:07
Analyst: DV
Percent Solids: 18%

Extraction Method: EPA 3546
Extraction Date: 08/19/21 01:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	46		ug/kg	36	7.5	1
Fluoranthene	2200		ug/kg	36	2.5	1
Naphthalene	79		ug/kg	36	6.4	1
Benzo(a)anthracene	820		ug/kg	36	3.4	1
Benzo(a)pyrene	1100		ug/kg	36	4.3	1
Benzo(b)fluoranthene	1800		ug/kg	36	3.4	1
Benzo(k)fluoranthene	520		ug/kg	36	3.2	1
Chrysene	1400		ug/kg	36	2.7	1
Acenaphthylene	190		ug/kg	36	4.4	1
Anthracene	260		ug/kg	36	2.8	1
Benzo(ghi)perylene	900		ug/kg	36	3.0	1
Fluorene	88		ug/kg	36	4.3	1
Phenanthrene	700		ug/kg	36	3.0	1
Dibenzo(a,h)anthracene	210		ug/kg	36	3.6	1
Indeno(1,2,3-cd)pyrene	1100		ug/kg	36	4.3	1
Pyrene	2000		ug/kg	36	2.5	1
2-Methylnaphthalene	38		ug/kg	36	10.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		30-130
2-Fluorobiphenyl	34		30-130
4-Terphenyl-d14	42		30-130

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083
Lab Number: L2144221
Report Date: 08/24/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8270D-SIM
Analytical Date: 08/24/21 15:05
Analyst: RP

Extraction Method: EPA 3546
Extraction Date: 08/19/21 01:05

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01-03 Batch: WG1536708-1					
Acenaphthene	ND		ug/kg	6.6	1.4
Fluoranthene	ND		ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	ND		ug/kg	6.6	0.63
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.63
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.53
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		30-130
2-Fluorobiphenyl	52		30-130
4-Terphenyl-d14	58		30-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2144221
Report Date: 08/24/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-03 Batch: WG1536708-2 WG1536708-3								
Acenaphthene	63		69		40-140	9		30
Fluoranthene	69		74		40-140	7		30
Naphthalene	61		65		40-140	6		30
Benzo(a)anthracene	68		72		40-140	6		30
Benzo(a)pyrene	73		80		40-140	9		30
Benzo(b)fluoranthene	73		77		40-140	5		30
Benzo(k)fluoranthene	72		81		40-140	12		30
Chrysene	67		72		40-140	7		30
Acenaphthylene	62		66		40-140	6		30
Anthracene	65		70		40-140	7		30
Benzo(ghi)perylene	68		75		40-140	10		30
Fluorene	64		69		40-140	8		30
Phenanthrene	64		69		40-140	8		30
Dibenzo(a,h)anthracene	70		77		40-140	10		30
Indeno(1,2,3-cd)pyrene	73		81		40-140	10		30
Pyrene	69		74		40-140	7		30
2-Methylnaphthalene	59		63		40-140	7		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2144221
Report Date: 08/24/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-03 Batch: WG1536708-2 WG1536708-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	79		84		30-130
2-Fluorobiphenyl	54		59		30-130
4-Terphenyl-d14	59		63		30-130

METALS

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-01 Date Collected: 08/06/21 09:50

Client ID: UG-11 Date Received: 08/09/21

Sample Location: HYANNIS, MA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 21%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	277		mg/kg	9.04	0.485	1	08/19/21 22:10	08/23/21 23:07	EPA 3050B	97,6010D	DL

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-02 Date Collected: 08/06/21 10:05

Client ID: UG-11A Date Received: 08/09/21

Sample Location: HYANNIS, MA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 10%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	406		mg/kg	18.9	1.02	1	08/19/21 22:10	08/23/21 23:34	EPA 3050B	97,6010D	DL

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-03 Date Collected: 08/06/21 10:20

Client ID: UG-11B Date Received: 08/09/21

Sample Location: HYANNIS, MA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 18%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	318		mg/kg	10.5	0.565	1	08/19/21 22:10	08/23/21 23:38	EPA 3050B	97,6010D	DL

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2144221

Project Number: 21083 **Report Date:** 08/24/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1537019-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	08/19/21 22:10	08/23/21 23:20	97,6010D	DL

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: 21083

Lab Number: L2144221

Report Date: 08/24/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1537019-2 WG1537019-3 SRM Lot Number: D109-540								
Lead, Total	99		105		72-128	6		30

INORGANICS
&
MISCELLANEOUS

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083
Lab Number: L2144221
Report Date: 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-01
Client ID: UG-11
Sample Location: HYANNIS, MA
Sample Depth:
Matrix: Soil

Date Collected: 08/06/21 09:50
Date Received: 08/09/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	21.2		%	0.100	NA	1	-	08/18/21 11:43	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083
Lab Number: L2144221
Report Date: 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-02
Client ID: UG-11A
Sample Location: HYANNIS, MA
Sample Depth:
Matrix: Soil

Date Collected: 08/06/21 10:05
Date Received: 08/09/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	10.1		%	0.100	NA	1	-	08/18/21 11:43	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083
Lab Number: L2144221
Report Date: 08/24/21

SAMPLE RESULTS

Lab ID: L2144221-03
Client ID: UG-11B
Sample Location: HYANNIS, MA
Sample Depth:
Matrix: Soil

Date Collected: 08/06/21 10:20
Date Received: 08/09/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	18.2		%	0.100	NA	1	-	08/18/21 11:43	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2144221
Report Date: 08/24/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2144221-01B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		MCP-PB-6010T-10(180)
L2144221-01C	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),MCP-PAHSIM-10(14)
L2144221-02B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		MCP-PB-6010T-10(180)
L2144221-02C	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),MCP-PAHSIM-10(14)
L2144221-03B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.0	Y	Absent		MCP-PB-6010T-10(180)
L2144221-03C	Glass 120ml/4oz unpreserved	A	NA		3.0	Y	Absent		TS(7),MCP-PAHSIM-10(14)

*Values in parentheses indicate holding time in days

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2144221
Project Number:	21083	**Report Date:**	08/24/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2144221
Project Number:	21083	**Report Date:**	08/24/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2144221
Project Number:	21083	**Report Date:**	08/24/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2144221
Project Number:	21083	**Report Date:**	08/24/21

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

L2144221 CF 8/17/21

Date Rec'd in Lab: 8/09/21

ALPHA Job #: ~~L2142562~~

8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9303

Client Information

Client: Horsley Witten Group
Address: 90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Email: bmassa@horsleywitten.com

Additional Project Information:

Project Information

Project Name: Cape Cod Gateway Airport
Project Location: Hyannis, MA
Project #: 21093
Project Manager: Bryan Massa
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Report Information - Data Deliverables

☐ ADEx ☐ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☑ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2	SVOC: ☐ ABN ~~☐ 8270~~ ☐ EPA 625	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Total Solids - SM2540	Total Lead - 6010D	PAH - SIM	PB	SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do	Sample Comments	TOTAL # BOTTLES
~~42562~~-01	VG-11	8/6/21	9:30	Soil	SB		✓						✓	✓	X	X			HOLD	3
44221-02	VG-11A	8/6/21	10:05	Soil	SB		✓						✓	✓	X	X			HOLD	3
-03	VG-11B	8/6/21	10:20	Soil	SB		✓						✓	✓	X	X			HOLD	3
~~-04~~	VG-Comp1	8/6/21	G: 8:50-10:20	Soil	SB		✓						✓	✓						3
Container Type																				
Preservative							/						/	/						

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_3$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	8/9 15:30	[signature]	8/9/21 15:30
[signature]	8/9/21 17:40		8/9/21 17:40

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L2201668
Client:	Horseley & Witten, Inc. Sextant Hill Office Park 90 Route 6A Sandwich, MA 02563
ATTN:	Brian Massa
Phone:	(508) 833-6600
Project Name:	CAPE COD GATEWAY AIRPORT
Project Number:	21083
Report Date:	01/25/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2201668
Report Date: 01/25/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2201668-01	OUTFALL_J	SOIL	HYANNIS, MA	01/10/22 12:30	01/12/22
L2201668-02	OUTFALL_PLAZA	SOIL	HYANNIS, MA	01/10/22 13:40	01/12/22

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2201668

Project Number: 21083 **Report Date:** 01/25/22

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2201668
Project Number:	21083	**Report Date:**	01/25/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2201668
Project Number:	21083	**Report Date:**	01/25/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

MCP Related Narratives

Sample Receipt

In reference to question H:

A Matrix Spike was not submitted for the analysis of Total Metals.

Semivolatile Organics by SIM

L2201668-02D: The sample has elevated detection limits due to the limited sample volume utilized during extraction, as required by the sample matrix, and due to the analytical dilution required by the sample matrix.

In reference to question G:

L2201668-01D and -02D: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question H:

L2201668-01D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%) and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

In reference to question I:

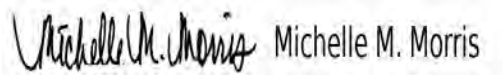
All samples were analyzed for a subset of MCP analytes per client request.

Total Metals

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 01/25/22

QC OUTLIER SUMMARY REPORT

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2201668
Report Date: 01/25/22

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
MCP PAHs by SIM - Westborough Lab								
8270E-SIM	OUTFALL_J	L2201668-01 D	Nitrobenzene-d5	Surrogate	0	30-130	-	- - not applicable - -
8270E-SIM	OUTFALL_J	L2201668-01 D	2-Fluorobiphenyl	Surrogate	0	30-130	-	- - not applicable - -
8270E-SIM	OUTFALL_J	L2201668-01 D	4-Terphenyl-d14	Surrogate	0	30-130	-	- - not applicable - -

ORGANICS

SEMIVOLATILES

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2201668

Project Number: 21083 **Report Date:** 01/25/22

SAMPLE RESULTS

Lab ID: L2201668-01 D
Client ID: OUTFALL_J
Sample Location: HYANNIS, MA

Date Collected: 01/10/22 12:30
Date Received: 01/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 141,8270E-SIM
Analytical Date: 01/23/22 16:46
Analyst: JJW
Percent Solids: 85%

Extraction Method: EPA 3546
Extraction Date: 01/22/22 10:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	490	J	ug/kg	770	160	100
Fluoranthene	41000		ug/kg	770	54.	100
Naphthalene	ND		ug/kg	770	140	100
Benzo(a)anthracene	11000		ug/kg	770	74.	100
Benzo(a)pyrene	14000		ug/kg	770	93.	100
Benzo(b)fluoranthene	23000		ug/kg	770	74.	100
Benzo(k)fluoranthene	7900		ug/kg	770	70.	100
Chrysene	18000		ug/kg	770	58.	100
Acenaphthylene	120	J	ug/kg	770	97.	100
Anthracene	1600		ug/kg	770	62.	100
Benzo(ghi)perylene	12000		ug/kg	770	66.	100
Fluorene	750	J	ug/kg	770	93.	100
Phenanthrene	20000		ug/kg	770	66.	100
Dibenzo(a,h)anthracene	2300		ug/kg	770	77.	100
Indeno(1,2,3-cd)pyrene	14000		ug/kg	770	93.	100
Pyrene	29000		ug/kg	770	54.	100
2-Methylnaphthalene	ND		ug/kg	770	220	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	**0**	Q	30-130
2-Fluorobiphenyl	**0**	Q	30-130
4-Terphenyl-d14	**0**	Q	30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2201668

Project Number: 21083 **Report Date:** 01/25/22

SAMPLE RESULTS

Lab ID: L2201668-02 D
Client ID: OUTFALL_PLAZA
Sample Location: HYANNIS, MA

Date Collected: 01/10/22 13:40
Date Received: 01/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 141,8270E-SIM
Analytical Date: 01/23/22 16:29
Analyst: JJW
Percent Solids: 50%

Extraction Method: EPA 3546
Extraction Date: 01/22/22 10:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP PAHs by SIM - Westborough Lab						
Acenaphthene	100	J	ug/kg	200	42.	5
Fluoranthene	9700		ug/kg	200	14.	5
Naphthalene	ND		ug/kg	200	36.	5
Benzo(a)anthracene	3000		ug/kg	200	19.	5
Benzo(a)pyrene	3600		ug/kg	200	24.	5
Benzo(b)fluoranthene	6200		ug/kg	200	19.	5
Benzo(k)fluoranthene	1800		ug/kg	200	18.	5
Chrysene	4200		ug/kg	200	15.	5
Acenaphthylene	38	J	ug/kg	200	25.	5
Anthracene	340		ug/kg	200	16.	5
Benzo(ghi)perylene	2600		ug/kg	200	17.	5
Fluorene	110	J	ug/kg	200	24.	5
Phenanthrene	4100		ug/kg	200	17.	5
Dibenzo(a,h)anthracene	540		ug/kg	200	20.	5
Indeno(1,2,3-cd)pyrene	3100		ug/kg	200	24.	5
Pyrene	7200		ug/kg	200	14.	5
2-Methylnaphthalene	ND		ug/kg	200	57.	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		30-130
2-Fluorobiphenyl	64		30-130
4-Terphenyl-d14	46		30-130

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2201668

Project Number: 21083 **Report Date:** 01/25/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8270E-SIM
Analytical Date: 01/23/22 13:05
Analyst: JJW

Extraction Method: EPA 3546
Extraction Date: 01/22/22 10:27

Parameter	Result	Qualifier	Units	RL	MDL
MCP Semivolatile Organics by SIM - Westborough Lab for sample(s): 01-02 Batch: WG1597001-1					
Acenaphthene	ND		ug/kg	6.6	1.4
Fluoranthene	0.46	J	ug/kg	6.6	0.46
Naphthalene	ND		ug/kg	6.6	1.2
Benzo(a)anthracene	0.69	J	ug/kg	6.6	0.62
Benzo(a)pyrene	ND		ug/kg	6.6	0.79
Benzo(b)fluoranthene	ND		ug/kg	6.6	0.62
Benzo(k)fluoranthene	ND		ug/kg	6.6	0.59
Chrysene	ND		ug/kg	6.6	0.49
Acenaphthylene	ND		ug/kg	6.6	0.82
Anthracene	ND		ug/kg	6.6	0.53
Benzo(ghi)perylene	ND		ug/kg	6.6	0.56
Fluorene	ND		ug/kg	6.6	0.79
Phenanthrene	ND		ug/kg	6.6	0.56
Dibenzo(a,h)anthracene	ND		ug/kg	6.6	0.66
Indeno(1,2,3-cd)pyrene	ND		ug/kg	6.6	0.79
Pyrene	ND		ug/kg	6.6	0.46
2-Methylnaphthalene	ND		ug/kg	6.6	1.9

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		30-130
2-Fluorobiphenyl	77		30-130
4-Terphenyl-d14	73		30-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2201668
Report Date: 01/25/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-02 Batch: WG1597001-2 WG1597001-3								
Acenaphthene	90		76		40-140	17		30
Fluoranthene	99		82		40-140	19		30
Naphthalene	86		72		40-140	18		30
Benzo(a)anthracene	102		84		40-140	19		30
Benzo(a)pyrene	104		86		40-140	19		30
Benzo(b)fluoranthene	98		81		40-140	19		30
Benzo(k)fluoranthene	104		81		40-140	25		30
Chrysene	91		78		40-140	15		30
Acenaphthylene	94		79		40-140	17		30
Anthracene	98		82		40-140	18		30
Benzo(ghi)perylene	91		71		40-140	25		30
Fluorene	92		77		40-140	18		30
Phenanthrene	92		76		40-140	19		30
Dibenzo(a,h)anthracene	99		79		40-140	22		30
Indeno(1,2,3-cd)pyrene	99		75		40-140	28		30
Pyrene	97		81		40-140	18		30
2-Methylnaphthalene	88		74		40-140	17		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2201668
Report Date: 01/25/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Semivolatile Organics by SIM - Westborough Lab Associated sample(s): 01-02 Batch: WG1597001-2 WG1597001-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	87		72		30-130
2-Fluorobiphenyl	79		67		30-130
4-Terphenyl-d14	72		61		30-130

METALS

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2201668

Project Number: 21083 **Report Date:** 01/25/22

SAMPLE RESULTS

Lab ID: L2201668-01 Date Collected: 01/10/22 12:30

Client ID: OUTFALL_J Date Received: 01/12/22

Sample Location: HYANNIS, MA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	8.80		mg/kg	2.21	0.118	1	01/20/22 15:25	01/20/22 20:38	EPA 3050B	97,6010D	DL

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2201668

Project Number: 21083 **Report Date:** 01/25/22

SAMPLE RESULTS

Lab ID: L2201668-02 Date Collected: 01/10/22 13:40

Client ID: OUTFALL_PLAZA Date Received: 01/12/22

Sample Location: HYANNIS, MA Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 50%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Lead, Total	71.0		mg/kg	3.81	0.204	1	01/20/22 15:25	01/20/22 20:43	EPA 3050B	97,6010D	DL

Project Name: CAPE COD GATEWAY AIRPORT **Lab Number:** L2201668

Project Number: 21083 **Report Date:** 01/25/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01-02 Batch: WG1595789-1										
Lead, Total	ND		mg/kg	2.00	0.107	1	01/20/22 15:25	01/20/22 22:09	97,6010D	DL

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: CAPE COD GATEWAY AIRPORT

Project Number: 21083

Lab Number: L2201668

Report Date: 01/25/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01-02 Batch: WG1595789-2 WG1595789-3 SRM Lot Number: D113-540								
Lead, Total	89		78		72-128	13		30

INORGANICS
&
MISCELLANEOUS

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083
Lab Number: L2201668
Report Date: 01/25/22

SAMPLE RESULTS

Lab ID: L2201668-01
Client ID: OUTFALL_J
Sample Location: HYANNIS, MA
Sample Depth:
Matrix: Soil

Date Collected: 01/10/22 12:30
Date Received: 01/12/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	01/13/22 11:58	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083
Lab Number: L2201668
Report Date: 01/25/22

SAMPLE RESULTS

Lab ID: L2201668-02
Client ID: OUTFALL_PLAZA
Sample Location: HYANNIS, MA
Sample Depth:
Matrix: Soil

Date Collected: 01/10/22 13:40
Date Received: 01/12/22
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	49.5		%	0.100	NA	1	-	01/13/22 11:58	121,2540G	RI

Project Name: CAPE COD GATEWAY AIRPORT
Project Number: 21083

Lab Number: L2201668
Report Date: 01/25/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2201668-01A	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2201668-01B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		MCP-PB-6010T-10(180)
L2201668-01C	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		MCP-PAHSIM-21(14)
L2201668-02A	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		TS(7)
L2201668-02B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		MCP-PB-6010T-10(180)
L2201668-02C	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		MCP-PAHSIM-21(14)

*Values in parentheses indicate holding time in days

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2201668
Project Number:	21083	**Report Date:**	01/25/22

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2201668
Project Number:	21083	**Report Date:**	01/25/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2201668
Project Number:	21083	**Report Date:**	01/25/22

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: DU Report with 'J' Qualifiers

Project Name:	CAPE COD GATEWAY AIRPORT	**Lab Number:**	L2201668
Project Number:	21083	**Report Date:**	01/25/22

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

141 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA and IIB, November 2021.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 1/12/22

ALPHA Job #: L2201668

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Client Information

Client: Horsley Witten Group
Address: 90 Route 6A #1
Sandwich MA 02563
Phone: (508) 833-6600
Email: Bmassa@horsleywitten.com

Additional Project Information:

Project Information

Project Name: Cape Cod Gateway
Project Location: Hyannis Airport
Project #: 21083
Project Manager: BryanMassa
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due:

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☑ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: Lead	PAH SIM	Total Solids (%)	SAMPLE INFO: Filtration ☐ Field ☐ Lab to do; Preservation ☐ Lab to do	Sample Comments	TOTAL # BOTTLES
01688-01	outfall_J	1/10/22	12:30	soil	SB	✓	✓	✓			3
-02	outfall_plaza	1/10/22	13:40	soil	SB	✓	✓	✓			3
											3

Container Type	A	A	P
Preservative	A	A	A

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Sarah Bartlett	1/12/22 13:37	Brianna Sousa - ADL	1/12 13:37
Brianna Sousa - ADL	1/12 17:15	[illegible]	1/12 17:15

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

APPENDIX D

PUBLIC NOTIFICATION DOCUMENTATION

Horsley Witten Group
Sustainable Environmental Solutions
90 Route 6A • Unit 1 • Sandwich, MA 02563
508-833-6600 • horsleywitten.com

November 6, 2023

Mr. Mark S. Ells
Town of Barnstable Manager
367 Main Street
Hyannis, MA 02601

Re: Availability of a Permanent Solution Statement with No Conditions
Upper Gate and Lewis Pond
Cape Cod Gateway Airport
480 Barnstable Road
Hyannis, Massachusetts
MassDEP RTN 4-298577

Dear Mr. Ellis:

On behalf of the Cape Cod Gateway Airport, the Horsley Witten Group, Inc. (HW) is notifying you as the Chief Municipal Officer for the Town of Barnstable of the completion and availability of a Permanent Solution Statement with No Conditions (PSS-NC). The PSS-NC is related to polycyclic aromatic hydrocarbons (PAHs) and lead detected in sediment samples obtained from Upper Gate and Lewis Ponds located at the Cape Cod Gateway Airport. The concentration of PAHs and lead detected in sediments were determined to be anthropogenic background and consistent with petroleum residuals that are incidental to the normal operation of a vehicle and atmospheric deposition of engine emissions.

Information regarding the release is available for public review at the Commonwealth of Massachusetts Department of Environmental Protection ("MassDEP") Southeastern regional office, located in Lakeville, Massachusetts or at:

https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0028577 .

This notification is being sent to you to comply with the Public Involvement requirements of the Massachusetts Contingency Plan, 310 CMR 40.1403.

If you have any questions, please contact Bryan Massa at 508-833-6600.

Sincerely,

HORSLEY WITTEN GROUP, INC.

Mark Nelson, P.G.
Principal

cc: Town of Barnstable Health Department

Appendix H

Circulation List

APPENDIX H CIRCULATION LIST

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jacobs.kira@epa.gov

Timothy L. Timmermann, Director
Office of Environmental Review
EPA New England-Region 1
5 Post Office Square, Suite 100
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Boston, MA 02109-3912
timmermann.timothy@epa.gov

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Rebecca Tepper, Secretary
Executive Office of Energy and Environmental Affairs
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Boston, MA 02114
MEPA@mass.gov

MEPA Office
Attn: EEA EJ Director
100 Cambridge Street, Suite 900
Boston, MA 02144
MEPA-EJ@mass.gov

Department of Environmental Protection
Commissioner's Office
One Winter Street
Boston, MA 02108
helena.boccadoro@mass.gov

Department of Environmental Protection
Southeast Regional Office – Lakeville
Attn: MEPA Coordinator
20 Riverside Drive,
Lakeville, MA 02347
george.zoto@mass.gov
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Massachusetts Department of Transportation
Public/Private Development Unit
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Boston, MA 02116
MassDOTPPDU@dot.state.ma.us

Massachusetts Department of
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The Massachusetts Historical Commission
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Boston, MA 02125

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Local Libraries

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Appendix I

Updated EJ Distribution List

APPENDIX I PROJECT SPECIFIC EJ DISTRIBUTION LIST

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